DOCUMENT RESUME

ED 164 876 CE 019 068

AUTHOR	Lamar, Carl S., Ed.
TITLE	Comprehensive Planning or Vocational Education. A Guide for Administrators. [8th Yearbook of the American Vocational Association].
INSTITUTION	American Vocational Association, Washington, D.C.
PUB DATE	78
NOTE	281p.
AVAILABLE FROM	The American Vocational Association, 2020 North Fourteenth Street, Arlington, Virginia 22201 ($12.00; 10-19 copies, 10% off; 20-29, 15% off; 30-39, 20% off; 40-49, 25% off; 50+, 30% off)
EDRS PRICE	MF-$0.83 HC-$15.39 Plus Postage.
DESCRIPTORS	Administrator Guides; Advisory Committees; Community Planning; Comprehensive Programs; Cooperative Planning; Decision Making; Educational Planning; Educational Policy; Educational Resources; *Educational Strategies; Federal Legislation; Instructional Systems; *Management Information Systems; Policy Formation; *Prediction; Program Coordination; Program Effectiveness; *Program Planning; Staff Role; Statewide Planning; *Vocational Education; Yearbooks
IDENTIFIERS	Education Amendments 1976; United States

ABSTRACT

This book was designed to serve as a guide for vocational education administrators in implementing comprehensive program planning (the process of forecasting the future and then preparing for it) as called for in the Education Amendments of 1976. The content is presented in ten chapters. The first provides an overview of comprehensive planning in vocational education, while the next chapter proposes a decision-making strategy for program planning. Chapter 3 covers the rationale and need for comprehensive planning at the national, state, and local levels. The focus of the fourth chapter is on information systems for planning, including the design, operations, and use of information systems. Chapter 5 on the use of resources to support planning functions discusses the securing, allocation, and management of resources. In the next chapter the human element in comprehensive planning is covered and includes staff involvement in planning and the effective use of advisory groups. Chapter 7 deals with the training of personnel to plan effectively, while the eighth chapter covers the implementation of the planning program. Chapter 9 discusses different planning techniques, such as the Delphi technique and advocate team progress. The last chapter focuses on evaluating the effectiveness of comprehensive planning. Four case studies demonstrating exemplary approaches to state plan development are appended. (EM)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED164876

COMPREHENSIVE PLANNING FOR VOCATIONAL EDUCATION

A GUIDE FOR ADMINISTRATORS

Edited By
Carl S. Lamar

U S DEPARTMENT OF HEALTH,
EDUCATION & WELFARE
NATIONAL INSTITUTE OF
EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

Ione Phillips

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC) AND USERS OF THE ERIC SYSTEM."

CE 019 068

AMERICAN VOCATIONAL ASSOCIATION

ISBN: 0-89514-003-9

Published 1978 by
THE AMERICAN VOCATIONAL ASSOCIATION, INC.
2020 North Fourteenth Street
Arlington, Virginia 22201

Copyright © 1978 by the American Vocational Association, Inc.
No part of this yearbook may be reproduced
in any form without written permission
from the publisher

Printed in the United States of America

PREFACE

Comprehensive planning for vocational education, the theme of the 1978 yearbook, has become an essential activity of the leaders who are responsible for the future development and improvement of vocational education programs and services throughout the United States. The Education Amendments of 1976 emphasize the urgency for comprehensive planning and accountability reporting as an effective means of utilizing the vast array of resources available to vocational education at the national, state, and local levels. It has become imperative, therefore, that increased attention be given to developing expertise in planning functions for vocational education programs at all levels.

Vocational education has gradually taken on greater responsibility for changing and improving our socioeconomic environment. The future success of vocational education in meeting the challenge that has been thrust upon it will largely depend on the initiative and competence exhibited by the leadership in launching a broad-based and sustained program of comprehensive planning—one that embraces all facets of vocational education and effectively involves all the essential resources that are available to support the total endeavor.

The basic purpose of comprehensive planning for vocational education as outlined in this yearbook is to chart the course for future action, to gain the support needed to implement a sound plan of action, and to provide an effective guide for program management. The contents of this yearbook deal with all aspects of comprehensive planning. They have been developed by a carefully selected group of authors who are acutely aware of the importance of comprehensive planning to the future welfare of vocational education.

This yearbook explores all aspects of planning as a basis for the development of essential concepts and generalizations needed to implement a sound program of vocational education. It should serve as a valuable source of information for persons preparing to become planners, those actively employed as planners, teacher educators, program specialists, and program managers.

The Board of Directors of the American Vocational Association selected the theme for the 1978 yearbook, appointed the editor, and approved an advisory committee. All of the chapter authors were approved by the AVA Executive Committee.

Dr. Carl F. Lamar was designated as the editor and his advisory committee consisted of: Dr. John K. Coster, professor of occupational education and director of the Center for Occupational Education at North Carolina State University; Dr. Mary Ellis, past president of the American Vocational Association and president of Ellis Associates, Inc. of Washington, D.C.; and Dr. William W. Stevenson, research specialist at the National Center for Research in Vocational Education, The Ohio State University.

Dr. Lamar has had broad experience in vocational education. He began his professional career as a vocational agriculture teacher of secondary, postsecondary, and adult students. He served as a state supervisor of agricultural education, teacher educator in agricultural education, state director of the Research Coordinating Unit and state director of vocational education in Kentucky. Presently, he is professor of vocational education at the University of Kentucky.

Dr. Lamar has written and edited many publications pertaining to vocational education. He co-authored a book entitled *Teaching Vocations* and wrote several articles for the *American Vocational Journal*. As a member of the vocational education staff and the graduate faculty at the University of Kentucky, he has served as advisor to many undergraduate and graduate students in vocational education.

Dr. Lamar has been an active member of the AVA since 1937. He served as secretary-treasurer of the American Association of Teacher Educators in Agriculture and the American Vocational Education Research Association. He served as a member of a panel for the reorganization of the American Vocational Association and on several other committees. In 1974, Dr. Lamar received the Outstanding Service Award from the American Vocational Association.

Dr. Lamar's background, training, experience, and interest in comprehensive planning for vocational education make him well qualified as editor of the 1978 AVA yearbook.

GENE BOTTOMS
Executive Director
American Vocational Association

INTRODUCTION

Comprehensive Planning for Vocational Education was planned and developed by leaders in vocational education to address a very important part of program conceptualization, development, and implementation. The authors have addressed the issues and problems that confront those in the profession who have the continuing responsibility for effective accomplishments in the broad area of planning.

Desirable results in comprehensive planning must come from a broad-based involvement of the people who should benefit from the program and effective cooperation and coordination by those at the national, state, and local levels who have responsibilities for program policy formulation, management of the program, and planning for its future.

This book has been organized as a logical sequence of 10 chapters relating to important aspects of comprehensive planning. To the fullest extent possible, the emphasis has been placed on conceptualizing comprehensive planning for vocational education in relation to federal legislation, state laws, policies of state boards for vocational education, recommendations of advisory groups, and findings and recommendations of many individuals and groups involved in planning activities.

Attention has also been given to the planning process and the resources needed to carry out the process effectively and efficiently to attain desired outcomes for the benefit of vocational education at all levels.

It was the recommendation of the 1978 Yearbook Advisory Committee that this yearbook be written to serve as a practical reference for those who have responsibilities for planning, managing program functions, or consulting with decision makers; those who are engaged in educating planners through preservice and inservice training programs; and those who are preparing to become active planners. It was recognized that planning is too broad a field to allow for an in-depth treatment of all its aspects. However, an attempt was made to provide helpful insights and suggestions for the entire field that would enable those interested to obtain easy access to those areas of planning where more attention is required.

In examining the components of comprehensive planning, the authors have presented different points of view. Throughout the book it is evident that they approached their assignment from diverse philosophical backgrounds and levels of experience. The editor made no attempt to change the intent of the authors. Their only constraints were to avoid undue duplication and to remain within the boundaries of their assigned topics.

This yearbook contains many helpful suggestions and examples for persons involved in planning. The case studies presented at the end explain how planning for vocational education is done in four states. The book should be made available where people are being prepared as planners and where planning is in progress.

Many individuals contributed to the organization and preparation of this book; however, special recognition must be given to the 1978 Yearbook Advisory Committee, to Dean Griffin, associate director of AVA, and to Toni Lydecker, AVA publications editor, for their expert counsel and assistance in outlining and preparing the manuscript for publication. The names of the authors of the 1978 Yearbook are presented in the last section. Everyone involved deserves our gratitude.

C.F.L.
Lexington, Kentucky
April 1978

CONTENTS

Preface 5

Introduction 7

Chapter 1

An Overview of Comprehensive Planning 13

Carl F. Lamar, Steven J. Gyuro, Lowell A. Burkett and Kenney E. Gray

Concept of Comprehensive Planning 13
Overview of Planning in Vocational Education 20
Policies for Comprehensive Planning 27
Need for Coordination and Cooperation 3[illegible]
Summary 45

Chapter 2

A Strategy for Comprehensive Program Planning 49

Jerome E. Moss, Jr. and David J. Pucel

A View of Vocational Education Planning 50
Guiding Values in Planning Vocational Education 52
Summary 65

Chapter 3

Comprehensive Planning at the National, State and Local Levels 67

Joseph E. Malinski, Ann M. Martin and Eugene Lehrmann

Rationale for Comprehensive Planning 67
Need for Planning at the National Level 77
Need for Planning at the State Level 87

Need for Planning at the Local Level 89
Planning as a Continuous Process 92

Chapter 4

Information Systems for Planning 97

William W. Stevenson, Ellen M. Bowers and J. B. Morton

Sociological Implications of an Organizational Structure 98
Information Needs and Decision Making 102
The Delphi Technique 106
Design and Operation of Information Systems 119
Use of Information Systems for Planning 123

Chapter 5

Using Resources to Support Planning Functions 129

Marjorie S. Stewart, Betty C. Powers, Patricia D. Murphy and Richard K. Crosby

Resources Needed to Support Planning Functions 129
Approaches to Securing Needed Resources 133
Allocation of Available Resources 140
Management of Resources for Effective Results 151

Chapter 6

The Human Element in Comprehensive Planning 159

Daniel B. Dunham, Barbara L. Simmons, Benjamin C. Whitten, Paul J. Harris and Don K. Gentry

Staff Involvement in Planning 160
Effective Use of Advisory Groups 168
Relationships with Other Agencies 181

Chapter 7

Training Personnel to Plan Effectively 189

Darrell L. Parks

Specialized Planning Skills Needed 190
Goals and Objectives of a Personnel Development Program 190
Training Requirements for Planners 192
Employment and Development of Training Personnel 199
Summary 201

Chapter 8

Implementation of the Planning Program 203

Francis T. Tuttle and Charles O. Hopkins

Formulation of Planning Responsibilities 203
Orientation of Planning Personnel 205
Mobilization of Other Planning Resources 206
Initiation of Planning Activities 208
Monitoring the Ongoing Planning Program 209
Production of Plans for Action 210

Chapter 9

A Survey of Planning Techniques 213

Kenneth W. Brooks, Carolyn G. Litchfield and Gary Q. Green

Planning Techniques and System Analysis 213
The Delphi Technique 214
The Advocate Team Process 220
The Program Evaluation and Review Technique 226
Other Planning Techniques 232

Chapter 10

Evaluating the Effectiveness of Comprehensive Planning 241

John K. Coster and Patricia D. Poplin

Perspectives on Evaluation and Accountability 242
The Triad of Goals 243
Evaluation of System Performance 245
Rules of Evidence for System Performance 250
Program Performance 254
Summary 255

Appendix

Approaches to State Plan Development: Four Case Studies 259

State Plan Development in Florida 259
  Leon A. Sims
State Plan Development in Minnesota 261
  Melvin E. Johnson
State Plan Development in Oklahoma 264
  Charles O. Hopkins and Paula Keller
State Plan Development in Pennsylvania 267
  James H. Bishop and Lowery E. McHenry

Yearbook Authors 271

CHAPTER 1

AN OVERVIEW OF COMPREHENSIVE PLANNING

Carl F. Lamar, Steven J. Gyuro, Lowell A. Burkett and Kenney E. Gray

Comprehensive planning is the process of forecasting the future and then preparing for it. Comprehensive planning offers today's leaders in vocational education a real challenge and an excellent opportunity to enhance the future development of vocational education. More effective planning is needed to meet increasing demands for the expansion and improvement of programs and services.

The Concept of Comprehensive Planning

Vocational educators need to visualize clearly the basic concept of *comprehensive planning,* a term that is being used more frequently by leaders in government, industry, and education as they attempt to find a more effective way to improve the planning process.

Webster (1976) defines *concept* as "something conceived in the mind, an abstract or generic idea generalized from particular instances, any formulated and widely accepted idea of what a thing should be" (pp. 233, 567).

Good (1959) describes *comprehensiveness* as:

> . . . that characteristic of a point of view or philosophical mind which strives for a maximum of inclusiveness, so that the whole picture rather than scattered or isolated segments is in view; it arises from an intellectual dissatisfaction unless all relevant considerations have been explored (p. 117).

Planning is an administrative function that supports leadership in the decision-making process. Planning needs to be well understood by vocational educators because they generally react to such a term on the basis of what it means to them—the concept that they have accepted. Planning should be goal oriented and organized to search constantly for information that will assist decision makers in the problem-solving process.

Comprehensive Planning for Vocational Education

Realistic comprehensive planning is exceedingly important to the future direction and success of vocational education. However, it will require: a more thorough understanding of what is involved in the organizational structure and planning process; a greater commitment to the role of planning in decision making; improved planning capabilities at all levels of operation; and more adequate resources to support the total endeavor. These conditions are extremely important if planners are to carry out their responsibilities in providing relevant information to policy makers and administrators for consideration in the decision-making process.

Need to Improve Planning

A review of the literature covering the past two decades indicates a general feeling that there has been inadequate planning for vocational education at the national, state, and local levels. This concern was expressed in the *Report of the Panel of Consultants on Vocational Education* to the Secretary of Health, Education, and Welfare (Willis, 1962), and by the U.S. Congress in preparing for the Vocational Education Act of 1963 (P. L. 88-210), the Vocational Education Amendments of 1968 (P. L. 90-576), and the Education Amendments of 1976 (P. L. 94-482). This concern also was reported to the Congress by the Government Accounting Office (Staats, 1974) and has appeared in numerous reports of the National Advisory Council on Vocational Education and various state advisory councils.

In recent years, increased attention has been given to the need for expanding the scope and improving the overall capabilities of planning for vocational education. Some concerns are that vocational educators need to be reoriented as to the basic purpose of planning, that too much emphasis has been placed on planning to meet regulatory requirements linked to federal financial assistance, and that not enough attention has been given to planning which would enhance program development and implementation.

A strong feeling has evolved that the planning process should be restructured to give more attention to planning which is based on the attainment of program goals and objectives. This approach should provide a wider range of alternatives for policy makers and administrators to consider in formulating policies and implementing programs and services.

Increased Emphasis on Planning

There seems to be a general feeling that increased emphasis must be given to the improvement of planning for vocational education at all levels of government. This is essential if national and state goals of "equal educational opportunity" and "equal employment opportunity" for persons of all ages in all communities of this country are to be attained.

The increased emphasis on planning for vocational education is due to several significant factors. There are limited resources; increased demands to improve existing programs and develop new programs; strong competitors for the available resources to satisfy various vocational education purposes; demands for increased involvement in the decision-making process; pressures to decentralize decision making, both at the policy-making and administrative levels; and increased demands for accountability regarding programs and services.

The need for more effective planning was made clear in the Education Amendments of 1976. In order to develop an appropriate model for comprehensive planning for vocational education and to produce appropriate capabilities at all levels, the entire planning mechanism for vocational education needs to be reexamined. It is evident that the system must be reoriented, restructured, and redirected in light of changing demands and that adequate resources must be made available for the mission to be accomplished.

Organization for Planning

Planning for vocational education must be considered in the broad framework within which it must operate. Vocational education should be viewed as an integral part of the total political, social, and economic environment. Each component needs to be conceptualized, planned, and implemented in terms of its relationship to the other parts of the total system. Each part affects the total structure to some degree. Operation of the total system can enhance or retard the development and effectiveness of any given part. Therefore, emphasis must be placed on cooperation and coordination throughout the system. However, effectiveness in bringing about desirable cooperation and coordination within the system depends largely on how policies are formulated and how programs are planned and carried out to implement the policies.

Throughout this country there are various approaches to planning, ranging from a centralized and highly specialized planning unit for all of state government—or a federal agency—to a planning unit that operates within a division of state government and deals with a single program area such as vocational education. Various approaches to planning also exist at the local level. The preferred operation seems to be a combination of these different approaches. Speaking of levels of organization for planning, Wolvek (1968) said:

> Planning . . . may be undertaken by a specialized planning unit or by operating divisions of the State Education Agency or, preferably by both . . . "from a viewpoint of feasibility and efficiency it is desirable for each major level of organization . . . to develop planning units designed to cope with the variety of problems encountered at each respective level" . . . planning is enhanced, the closer it is carried out to the level of organization at which a given problem exists (pp. 15, 20).

It seems obvious that comprehensive planning for vocational education must relate to a much broader approach to planning which encompasses the entire political, social, and economic universe. Consequently, it needs to fit logically into the overall planning effort concerned with social and economic problems.

Coordination and cooperation in the effort, as well as the use of planning procedures by which the available resources may be brought to bear on problems of general concern, are the basic objectives of comprehensive planning. Regardless of whether a problem is identified as a concern of the central planning unit or a planning unit in the division of vocational education, the planning procedure must be sensitive to the type of problem being considered so that the processes and techniques used will be relevant to the solution required.

As noted, experience has shown that planning is enhanced the closer it is carried out to the level at which the problem exists. When the planning unit is located within the division, an activity such as inservice training can be used as a technique to orient planning to the details of the program operation. Planning can also be tied in with an in-house communications system that is based on a common understanding of program concepts, technical language characterized by the program, and actual program operations. This would tend to reduce the number of problems directed to the planning unit and would also enable the unit to concentrate on priority problems which, from their origin and by their nature, probably require an intra-agency coordinated planning effort.

Need for Flexibility

Planning is intended to support the activities of policy makers and administrators as they attempt to make program decisions. Effective planning must be closely related to policy making and implementation. Therefore, it is a means to an end and should be sustained as a continuous process. Planning should give constant attention to anticipated change and the need for redirection, renewal, or revitalization of programs and services.

Both the approach to planning and the planning process must be flexible in their design and application if they are to serve a useful function for vocational education. The situation at the different levels of operation—federal, state, and local—and within the different states varies considerably. No two situations are identical. Some states are divided into regions, which are subdivided into local school districts. Some states have combined local school districts to form intermediate school districts. Some states have only local school districts and at least one state has a single school district.

The concept of comprehensive planning, the basic principles that support it, and the standards used to measure its effectiveness should be applicable to the conditions that exist in each state. In this regard, Diez-Hochleitner (1964) said:

> Educational planning is a cohesive force that coordinates and directs many different components of an educational system and insures that widely accepted, long-term goals are approached more objectively. It implies a realistic appraisal of the state's financial means, its human resources, the institutional structures, and other factors bearing upon the success of an educational plan (p. 86).

Functions of Planning

A functional concept of comprehensive planning for vocational education must take into account the interrelationships of social, economic, and environmental resources. These relationships can be expected to change continuously because of the impact of new knowledge, scientific advancements, and technological developments.

Answers to the question "What functions do we want vocational education to perform?" provide the fundamental basis for planning. Only when this question is answered can the work of planning become meaningful. Any group concerned about or having responsibility for vocational education must have a clear understanding of its purposes, goals, and objectives. Such understanding is essential if planning is to be properly oriented to, and supportive of, the program. Comprehensive planning can then become a frame of reference for an interdisciplinary approach to vocational education. In this manner, it can appropriately be fitted into an overall planning system. Several planning objectives are coordination of the utilization of available resources, consideration of alternatives in the use of resources, and selection of methods and techniques by which the resources are brought to bear on problems.

Planning is both a leadership and an administrative function. It is a continuous process that is closely related to policy making and program implementation. However, it does not make policies or implement programs. The job of the policy maker is to formulate policies and the job of the administrator is to implement programs based upon the policies. The planning unit should effectively enhance both functions during the process that leads to decision making. The planning unit, however, must remain separated from the act of decision making if it is to serve a viable function. Therefore, planning needs to become more of a supportive function in administration by providing services to the decision-making process. Too often, its primary role has been to prepare state plans according to federal guidelines to qualify for federal financial support or to prepare reports to meet compliance requirements.

Dimensions of Planning

Planning has evolved from stressing physical and economic development to a much broader role of social planning that emphasizes meeting the needs of people. Planning has taken on both comprehensive and coordination dimensions. Actually, planning for vocational education embraces at least three significant dimensions that need to be clearly understood in the development of a viable organizational structure: intra-program planning, vertical planning, and horizontal planning. All these dimensions have received increased emphasis in the Education Amendments of 1976.

Before 1963 intra-program planning was confined largely to specific programs such as agriculture, home economics, and trade and industrial education; for example, people in agriculture did their planning without communicating with the people in home economics or trade and industrial education, and vice versa. Practically no attention was given to satisfying individual needs through participation in the appropriate phases of two or more different occupational fields. Efforts to improve the quality of instruction were largely confined to each occupational field. This pattern was changed with the passage of the Vocational Education Act of 1963. The emphasis shifted from occupational fields to serving the vocational education needs of certain categories of people. Also, increased emphasis was placed on improving the quality of instruction by the use of certain ancillary or supporting services. It was recognized that the entire program of vocational education would be significantly improved by the use of supporting services such as administration and leadership, teacher education and supervision, vocational guidance services, research and development, curriculum development, and program evaluation. It was recommended that the supporting services be organized and prepared to improve the quality of the instructional program at all levels. Increased emphasis was placed on the development of comprehensive programs of vocational education by interrelating all of the parts—in order to build on common strengths—and by emphasizing cooperation and coordination in the planning process.

Since the beginning of vocational education, state agencies have largely engaged in vertical planning, extending from the state level down through the region—or intermediate school district—to the local educational agencies. However, in recent years, increased attention has been given to extending such planning upward to the national level to include the federal agencies involved in vocational education. This upward movement occurred because vocational education has become a national concern and, as such, should receive greater attention and increased support at the national level. This process has tended to strengthen vocational education, especially the planning process, because of the availability of additional resources provided by federal agencies. It has also brought about a stronger national, state, and local linkage in dealing with the issues pertaining to vocational education and in giving increased support to the total planning effort.

The third vocational education planning dimension is horizontal planning, which extends across all facets and areas of responsibility at a given level. This includes the involvement of individuals, agencies, and advisory groups that have a vested interest in the planning process and the ultimate outcomes of vocational education.

What does all of this mean for vocational education? It means that all aspects of the program should be brought together into their proper relationship. This arrangement should provide reinforcement in improving the quality of instruction. The real significance of interrelating the three dimensions of planning is clear. With intra-program planning occurring in vocational education, increased attention would be given at the same time to vertical planning to establish the appropriate linkages between the national, state, and local levels of operation, and planning at each level of operation would be extended horizontally to involve all available resources in a cooperative and coordinated effort. This comprehensive planning effort should improve the overall quality and effectiveness of vocational education. It is important that all individuals, agencies, and organizations that relate to vocational education be involved in an appropriate manner in the planning process.

Comprehensive Planning

The concept of comprehensive planning accepted for vocational education needs to be sound, clearly defined, and meaningful. It should give direction to the development of a realistic program of action for policy makers and administrators and to the planners who will be expected to assist them in the decision-making process. Wright (1969) has defined comprehensive planning in these terms:

> Comprehensive planning is a process of designing programs and allocating resources to achieve specific objectives, then modifying and improving those activities through continuous evaluation of how well the objectives are reached. It requires utilization of all available and applicable planning technologies, widespread involvement of those concerned with the results of planning—those who design and operate the system, those who pay the bills, those who are affected by the system, those who—in other agencies—have overlapping and/or related responsibilities, and those who control—or tap—needed resources—and mechanisms for facilitating and coordinating the highest quality planning (p. 1).

This definition shows that comprehensive planning includes many components and involves many relationships. It is a cohesive arrangement designed to coordinate and direct the many different facets of the educational system to ensure that the attainment of the widely accepted purposes, goals, and objectives of vocational education is undertaken on a more systematic basis. It implies a realistic involvement and appraisal of the financial means, human resources, institutional structures, and other relevant factors that have a bearing upon the continuing success of vocational education.

In carefully analyzing the Education Amendments of 1976, it becomes evident that there is an increased emphasis on program planning, evaluation, and accountability. Therefore, an increased emphasis on comprehensive planning—and greater involvement of individuals, agencies, organiza-

18

tions, and advisory groups in the process—is necessary. In the declaration of purpose, the amendments (section 101)say:

> It is the purpose of this part to assist states in improving planning in the use of all resources available to them for vocational education and manpower training by involving a wide range of agencies and individuals concerned with education and training within the State in the development of vocational education plans (p. 2169).

It is the purpose of this yearbook to cover the subject of comprehensive planning for vocational education in a functional manner and as thoroughly as possible. It attempts to follow a logical sequence in developing a workable concept of comprehensive planning for vocational education and in determining how to implement an effective planning system. In this regard, Hansford's foreword in "Cooperative Planning for Education in 1980" (Morphet & Jesser, 1968) states:

> Specific provisions must be made for comprehensive planning which not only recognizes the inevitability of change, and the need for determining its direction, but also exposes the identifiable problems of the future and develops alternatives for their solution (p. v).

Overview of Planning in Vocational Education

Vocational education is both a discipline and an institution in our society. It encompasses all levels of education and training; embraces a broad spectrum of individual, economic, and social needs; and manifests itself in a diversity of forms. Vocational education has historical roots in social and economic developments that evolved from technological and political advancements.

Given its comprehensiveness, complexity, and potential for impact, systematic planning can be proposed as a prerequisite for vocational education's complete and meaningful actualization. The idea of planning is neither new nor revolutionary, but it has taken on a revitalized meaning. At the national level, planning became a new and persuasive initiative during President Lyndon B. Johnson's administration and was explicitly addressed in the 1968 Amendments to the Vocational Education Act of 1963. This initiative in vocational education is predominant in the Education Amendments of 1976.

Need for Planning Vocational Education

Recognition of the importance of planning in vocational education has permeated both the public and private sectors. This is apparent through intergovernmental and interlegislative initiatives. Vocational education planning occurs at the local, regional, state, and national levels. It involves vocational education, the Comprehensive Employment and Training Act (CETA), and other related federal and state legislation and programs. The need for planning vocational education has been persistent and is evidenced by the following:

1. Legal requirements and restrictions (federal, state, regional and local).

2. Scope and complexity of present vocational education program offerings and program needs.

3. Demand for public justification of resource allocation to vocational education.

4. Necessity for unified programs to solve problems facing vocational education.

5. Realization of the active competition of vocational education with other sectors of the economy (military, welfare, transportation, space program, etc.) as well as within the field of education (higher education, general education, basic adult education, etc.) for limited resources.

6. Urgency for public accountability (evaluation) of vocational education programs, services, and activities.

7. Requirement for valid and timely information for decision making by vocational educators at all levels of vocational education.

8. Requirement for priorities among multiple objectives in vocational education.

Systematic planning is designed as an integral and internalized part of all vocational education efforts, enabling them to become more responsive to individual and social needs and to more effectively and efficiently utilize available resources in delivering services.

The purpose of this section is to present an overview of planning in vocational education and to build a sensitivity to and an understanding of what planning is, what is involved, and what benefits can be derived.

Emphasis on Planning

The distinction between *planning* and *plan* should be clarified. *Planning* is a methodology or process. A *plan* is a document that represents the results of planning at a given time. Our attention will focus on planning, not on a plan. A plan is unique to its authors and the requirements with which they are concerned. Our focus is on the generic process of planning which will optimize the return on investment made by the vocational decision makers regardless of title or level.

Planning is representative of rational human behavior. As rational beings, we endeavor to bring about a desired state by controlling and manipulating the environment.

Basic management functions. Four basic management functions are *planning, organizing, directing, and controlling*. Since the dawn of history, people have tried to plan and direct the present and the future. Planning is the first and primary function of management; it directly influences and is influenced by the other three functions. However, planning is the management cornerstone, because the other functions are based upon its outcomes.

Essential components in planning. The purpose of planning is to develop a logical and cohesive set of decisions for the allocation of required resources: to specify means that will optimize the achievement of stated ends within a given environment and in a specified time frame. An initial statement will provide the essential components to be considered in the planning process. The key components are decisions, resources, means, ends, and a context. These planning components will serve as the threads of a fabric for this discussion.

The initial set of *decisions* reflects the temporal nature of planning and the necessity of change. It also requires a broad interpretation of *resources,* including time, funds, people, and information. *Means* provide the basis for consideration of alternatives which will result in the selection of a course of action that encompasses technical, managerial, legal, and organizational aspects. *Ends* are well-defined and articulated statements that embody specifications, values, priorities, and time horizons. *Context* means that planning does not take place in a vacuum, but must interact with a variety of other factors.

Planning in Vocational Education

If planning is the process, then vocational education is the substance and the parameters of its context. When one applies process to substance within a context, the phenomenon becomes both a science and an art. The development of an understanding of planning should evolve with a concurrent understanding of the substance with which it deals.

To provide a framework for an overview of planning in vocational education, it is essential that the major elements of the substance be identified. These major substantive elements of vocational education will provide the vehicle necessary to further relate to the concepts and processes of planning.

Substance of planning in vocational education. Depending on one's perspective, the major elements of vocational education germane to planning will vary. However, a systems approach has been employed in this discussion to identify major elements essential to planning vocational education. Focussing on what substantive elements would be required for planning in vocational education, the analysis resulted in the following nine elements. Substantive data or information is necessary concerning the: (a) learner, (b) labor market, (c) job and career competencies, (d) educational resources, (e) vocational education programs, services, and activities (regardless of where they occur), (f) delivery system definitions and structural articulation, (g) participants, (h) legislative and governance requirements, and (i) philosophical and value positions.

Knowledge and understanding of the learner's capabilities, interests, aptitudes, expectations, and limitations are basic to planning in vocational education. The learner is an individual to be served, regardless of age, sex, special needs, prior experience, and level of entry or reentry into the educational process. The labor market element should incorporate supply, demand, and emerging occupational needs at a degree of detail that has utility for programmatic planning at a particular organizational level. Job and career competency requirements and hierarchies, as well as transferable skills, need to be delineated clearly. Planning should be concerned with entry into the labor market, horizontal and vertical career matrixes, reentry into the labor market, upgrading of skills, and retraining dimensions of employment opportunities.

It is essential that educational resources be determined realistically in the planning process to assure an accurate assessment of the capacities and limitations of the operating delivery system. Included in the area of educational resources are teachers, curriculum, facilities, support services, and cooperative training opportunities.

An inventory and an analysis of current vocational education programs, services, and activities are critical elements with which planning is concerned. The process of planning in vocational education needs to define the forms of delivery systems operating in both the private and public sectors and review structural integration and articulation.

The category of "participants" refers to the roles and functions of the various agencies, institutions, organizations, and associations which need to interact in the planning process and implementation of vocational education. With increased legal, regulatory, and governing requirements at all levels and within related areas (handicapped, CETA, etc.), the legislative and governance element is essential to planning in vocational education. Attention should also be given to the philosophical position and social values of the planning organization and the constituency served.

These nine major elements constitute the substance and parameters of planning in vocational education. A different approach to analysis could yield an equally valid set of elements. But for our purposes, it is proposed that these nine elements serve to define the substance and parameters for planning in vocational education.

Issues with implications for planning. In addition to substantive elements in the planning process, one should address correlate issues that have implications for guiding the process and assessing the outcome. A preliminary list of issues or indicators of worth is provided for careful consideration; it is not meant to be all-inclusive, but ought to be considered continually throughout the planning process. These issues are:

1. *Effectiveness.* Are we doing the "right" things at the right time for the right audiences?
2. *Efficiency.* Are we doing things in the most productive and cost-effective manner?
3. *Utility.* Can the planning process be used by those who should use it?
4. *Feasibility.* Is the planning process compatible with and supportive of reality? Is it workable?
5. *Compatibility.* Does the planning process support current policy and

procedures and address regulatory requirements? Does it facilitate change where and when necessary?

6. *Productivity*. Does the planning process maximize the return on investment?

7. *Accountability*. Does the planning process accomplish and support the goals and objectives?

8. *Impact*. Does the planning process make a worthy difference?

Ancillary requirements that facilitate planning. Planning in vocational education needs not only to have substance and address issues, but to be cognizant of some ancillary requirements that facilitate the planning process and are critical to its success. Vocational education planning should involve negotiation, compromise, persuasion, coalition, and lobbying. Successful employment of these ancillary techniques will enable planning to result in a productive enterprise.

The Process of Planning

Need for a common definition. The term *process* is used in a number of ways. To assure a common reference, we will use the definition presented in *Webster's New World Dictionary* (1974): "a particular method of doing something, generally involving a number of steps or operations" (p. 917). The significant phrase is "a particular method," which implies structure and conscious intent. Therefore, the process of planning is "a particular method" for arriving at a set of decisions about future actions. Principally, planning is concerned with decision making. It is a goal-setting effort which focusses continuously upon the resources-to-means-to-ends interrelationships.

Planning a decision-making activity. In a decision-making activity, one should make choices based upon a balanced mix of evidence and judgment. This requires the process to operate with information. The degree of adequacy, validity, reliability, and timeliness of the information impacts directly on the quality of the process and its product—the plan.

The planning process can be characterized further as activity directed toward: (a) reducing risk, (b) optimizing change, (c) fostering unity, (d) facilitating continuity, (e) incorporating flexibility and adaptability, (f) providing precision, (g) contributing to communications, (h) anticipating future circumstances and their consequences, and (i) considering trade-off effects.

Steps in the planning process. Many documents have presented approaches, methods, and models for the planning process. However, in an overview of planning in vocational education, it is essential that a common framework be formulated. The process of planning in vocational education should incorporate the following steps: (a) explore futures and examine values, (b) establish goals (normally long-range), (c) sense opportunities and assess needs, (d) determine capacities and constraints, (e) specify objectives (normally short-range), (f) set priorities, (g) generate alternatives, (h) analyze alternatives, (i) select a course of action, (j) identify resource requirements, (k) prepare implementation considerations, (l) formulate evaluation, and (m) design feedback and updating mechanisms.

The process steps are not linear in application, but iterative and interactive. The key to planning is that each step be considered and acted upon. The amount of time and information consumed by each step will vary. In many cases, steps will be recycled and the outcomes will be reviewed and revised. However, the essence of the planning process is that these steps are involved, focussed, and deliberate. Implemented as a process, the steps will contribute to the development of a productive and viable plan. Subsequent sections will explore in detail the activities and options available to execute the steps in the planning process.

Eight important questions. The efficacy of any planning process should be reviewed in light of eight simple but powerful questions: What? Why? How? Who? When? Where? With what? and How much? If planning enables one to respond adequately to these eight questions, the process and substance employed have been productive.

The substance and process in planning vocational education may differ according to the planners and their situations, but the substantive elements and process steps need to be present to assure systematic and comprehensive planning.

Context of Planning

Dimensions that influence planning. The substance and process of planning should be viewed in the context in which they take place. It is necessary that one be aware of the process and its contextual interactions and influences. The context has several dimensions. Social, cultural, economic, and technological dimensions influence continuously both the substance and the process of planning. Another significant dimension is the political influence. One ought to understand it, deal with it, and employ the political process to support the planning process; it should be recognized that both are mutually dependent and supportive.

Importance of individuals and the organization. The principal contextual concern in planning should be the individuals involved and the organization within which it takes place. The planners, decision makers, participants, and supporters in the planning process hold the key to success or failure. The process does not plan—people plan. Their backgrounds, experience, attitudes, and positions dictate the nature of the planning process. The organization also plays a major role. Where the planning is accomplished within the structure and who participates in and implements the process have direct implications for the effectiveness and efficiency of the planning effort.

Requirements of the planning process. The planning process places certain requirements upon its context. The prerequisite to planning in any organization must be an explicit commitment by top management. Without this commitment to support and use planning, a waste of time and resources is probable. Other requirements of the planning process include: (a) competencies, (b) time. (c) funds, (d) information, and (e) a positive organizational climate. The organization requires planning competencies to implement the process and to fully utilize the substance. Time and availability of funds must be recognized and allocated.

Again, it is necessary to emphasize that information is the fuel which allows the process to work. The need for adequate and timely information in the planning process cannot be overstated.

Finally, a supportive and positive organizational climate is essential. Those involved in the planning process are an integral part of any organization. They and the organization need to interact freely to provide a climate conducive to the planning process.

Tools and techniques needed. The planning process needs to employ a wide range of tools and techniques. Not all tools will be appropriate or effective in a given situation. Those engaged in the planning process in vocational education should be aware of the tools that are available and being used in some form in a variety of organizations. An attempt has been made to identify a preliminary list of techniques to provide a sensitivity to the array of tools available: (a) Planning, Programming, and Budgeting Systems (PPBS), (b) Program Evaluation and Review Technique (PERT), (c) Management by Objectives (MBO), (d) Zero-Based Budgeting (ZBB), (e) Management Information Systems (MIS), (f) Advocate Team Process, (g) Delphi Technique, (h) Fault Tree Technique, (i) Scenario Technique, (j) Convergence Technique, (k) Simulation, (l) Operations Research Applications, (m) Forecasting and Trend Analysis Methods, (n) Modeling, and (o) Nominal Group Technique.

Benefits of Planning

Planning does not promise a rose garden. Nor should it be perceived as a panacea. But when appropriately and adequately employed, planning is a process that will provide an improved basis for decision making. Yes, planning is mandated, but how we choose to employ the planning process will reflect its true value. The purpose of planning is to assure that vocational education is responsive to individual and societal needs and that it maximizes the return on our investment. Good planning should yield improved vocational educational programs, services, and activities. Progress in planning will promote more effective and efficient utilization of available resources.

Planning is like learning to walk. One knows where one wants to go, finds out how to get there, is determined, and begins with the first step. Systematic and comprehensive planning in vocational education will ultimately benefit all participants.

This overview of planning in vocational education has attempted to highlight the concepts, substance, process, and context of planning. How you employ this information will dictate the benefits you will derive.

Policies for Comprehensive Planning

Importance of Sound Policies

An effective program of vocational education must be undergirded and continuously reinforced by sound policies. Supporting services, such as comprehensive planning for vocational education, must also be guided by appropriate policies to fulfill their intended mission.

Improved procedures will enhance the policy-making process. More attention must be given to the attainment of well-defined written policies to enhance the effectiveness of planning, development, implementation, and evaluation of vocational education.

States vary widely in the extent to which they have developed policies for vocational education. While many states have formulated excellent policy statements, many others have not. It should be a standing policy that federal, state, and local policy-making bodies review their policy statements about vocational education on a systematic basis and update, extend, or modify them as needed.

Webster (1976) defines the term *policy* as follows:

> Policy is a definite course or method of action selected from among alternatives and in light of given conditions to guide and determine present and future decisions. It is a high-level overall plan embracing the general goals and acceptable procedures of a governmental body (p. 890).

How Policy Evolves

Basic policy decisions for vocational education should be made by the citizens in our society through their chosen representatives. In this regard, Hamlin (1960) says:

> The American system places responsibility for public policy upon the citizens of the country. . . . Those who represent citizens in dealing with particular public affairs, such as public education, must be competent, diligent, and adequately representative of the citizenry. . . . By improving citizen participation in school affairs they educate citizens for participation in all public affairs (p. 3).

The policy-making group for citizens at the national level is the U.S. Congress. At the state level, it is the state legislature and the state board for vocational education, and at the local level, the board of education is the key policy-making body. The policy-making process at all levels of government should be meaningful and highly educational to those who participate. Actually, the policy-making process itself may be of more importance to the future welfare of vocational education than the policies which are developed.

Policies for vocational education have their inception in the basic forces that shape our society. Campbell, Bridges, Corbally, Nystrand, and Ramseyer (1971) described four fundamental movements or forces in the policy-making process.

The first group of forces are basic social, economic, political, and technological developments. They are national in scope, but they impinge on every state and local community across the nation.

The second force involves antecedent movements such as the recommendations of President John F. Kennedy's Panel of Consultants on Vocational Education which led to the passage of the Vocational Education Act of 1963. Action taken by the press, television, and other media may reinforce such a movement and strengthen its total impact. All of these activities are antecedents to the enactment of vocational education policy.

The third force or movement involves political action by individuals, organizations, and consultant groups. Usually, such action is interrelated at the local, state, and national levels. It involves such organizations as the American Vocational Association, advisory groups for vocational education, the U.S. Chamber of Commerce, and certain labor organizations.

The fourth movement involves formal enactment. This may occur at the local, state, and national levels through legislative, judicial, and executive means. Through this process, much federal vocational education legislation has been enacted.

Role of State and Local Units of Government

Policy for vocational education emerges from basic problems and issues which form the basis for action. Much of this concern comes from the state and local levels. Though all levels should be involved in the policy-making process for vocational education, the major responsibility should rest with the state and local units of government. The role of the state should be to ensure a coordinated statewide program of vocational education that responds to the total needs of the state and to give dynamic leadership in the development of new and exemplary programs.

The Vocational Education Act of 1963 (P. L. 88-210) and the Education Amendments of 1968 (P. L. 90-976) and 1976 (P. L. 94-482) have given the states more flexibility in program planning. These acts have given policy-making powers to the states through the requirement that each state must establish state and local advisory groups for vocational education. These advisory groups are separate and independent from the state and local boards of education, with their membership broadly representative of business, industry, labor, education, and the general public. The legislation also emphasizes cooperation and coordination with other agencies and advisory groups that have responsibility for employment and training programs such as those supported by the Comprehensive Employment and Training Act (CETA).

Factors to Consider in Planning

Regulations for the administration of vocational education are recorded at the local, state, and national levels in official documents, such as the minutes of meetings of local boards of education, state statutes, administrative regulations of state boards for vocational education, federal acts passed by the Congress, and rules and regulations published in the *Federal Register*. These documents should be reviewed and analyzed to determine which policies have been developed to give direction to comprehensive planning for vocational education. In this regard, Venn says in the foreword to *Vocational Education Bulletin No. 1* (U.S. Dept. of HEW, 1966), that:

> Although regulations are necessary in administering a program of vocational education, effective planning requires that persons responsible for vocational education consider factors other than these regulations. Some factors significant in operating an effective program of vocational education are: (1) employing highly qualified and efficient personnel; (2) relating the program directly to employment opportunities and needs of youth and adults for opportunities in vocational education; (3) analyzing occupations as the base for specific course content; (4) providing needed facilities and equipment; (5) allowing sufficient time for instruction to develop skills and judgment for the accepted levels of performance in the student's chosen occupation; and (6) evaluating and continued revising of the program; as well as (7) engaging in research; and (8) cooperating with interested groups (vi).

Policy Making Related to Administration

In principle, the governmental body such as the Congress, state legislature, or state board for vocational education makes policies, while the administrative staff executes these policies. Policy making and administration are separate functions. The policy maker should not be involved in administration and the administrator should not make policy. However, the administrator can contribute to sound policy development for vocational education. Provisions should also be made for policy makers and the public to review administrative practices and procedures followed in implementing policy.

It is expected that the administrator and his or her staff will develop and recommend policy relating to a vocational education problem or issue to the policy-making body. In the development of such policies, opportunity should be given to relevant groups to provide input. Information should be sought from groups within vocational education such as teachers, supervisors, program specialists, and teacher educators. Research findings should be carefully analyzed and interaction with concerned groups, including the national, state, and local advisory groups, should be maintained so they will better understand the problems or issues and be in a position to provide needed assistance in getting good policies formulated.

Everyone directly involved in or affected by vocational education should be concerned about the policy-making process and participate to whatever extent possible. However, final enactment of policy can be done only by an officially designated body.

The Need to Revise Policies

Policies need to be examined constantly and adjusted to meet the goals set for vocational education by federal and state legislation. Achievement of the goals for vocational education depends on careful study of all aspects of the program, comprehensive planning, and vigorous action by all vocational educators. This is especially true for those in leadership positions.

Educational decision makers must be involved directly in reviewing and developing appropriate policies that will give direction to vocational education programs if national, state, and local goals are to be attained. It must not be taken for granted that everyone knows what kind of vocational education programs and services are needed to produce a quality program that will meet the needs of people.

Everyone involved in the policy-making process for vocational education should be thoroughly familiar with the basic principles of vocational education that should serve as the standards for policy development. In regard to these principles, Barlow (1975) says:

> The majority of the principles that guide vocational education today were first delineated during the period of 1906 through 1917, and have been periodically reinterpreted to reflect changes in society, business, industry, and education. Principles that were first expressed as beliefs or theories have since 1917 been verified and are now considered as standards or basic truths (p. 4).

These principles served as the foundation upon which the Vocational Education Act of 1917 (Smith-Hughes Act) was developed and enacted by the Congress. The early beliefs or theories about vocational education have been tested in the crucible of continuous planning, development, experience, and ever-expanding legislative action. They have been validated and generally accepted as program standards.

The principles of vocational education represent the basic truths or laws that describe its fundamental characteristics. These principles should serve as the fundamental basis for determining long-range policies and are concerned with economic development, vocational education needs of people, requirements of the labor market, and the total social structure. The principles of vocational education are an easily understood base upon which policy makers at all levels can produce realistic policies.

Responsibility of Vocational Educators

Public officials in policy-making positions constantly make decisions that affect the way people function in their everyday activities. This is also true regarding decisions that affect vocational education. Such decisions may or may not be in the best interest of vocational education. All policy makers need and should expect help from the people who can contribute their expertise to the decision-making process.

Vocational educators have a responsibility to constantly monitor public policies that have a bearing on the quality of vocational education. Failure of vocational educators in leadership positions to influence the policy-making process, as well as the policies that affect vocational education, can be highly detrimental to the future development of vocational education. There is going to be an increasing demand for vocational educators to make a positive impact on policy formulation at the national, state, and local levels.

Cooperation and Coordination in Policy Making

Local, state, and national policy making for vocational education should be a cooperative and coordinated effort. Education in this country is considered to be a state function. However, the national government has been involved in public vocational education since passage of the Smith-Hughes Act in 1917. It is a fact that federal policies affect vocational education planning, development, and implementation at the state and local levels. Hamlin (1960) said:

> The practical question to consider is not whether the national government should participate in public education, but how and with what safeguards it should participate. Obviously, local, state, and national policy making for public education should not be carried out in isolation from each other. Local policy makers should be far more aware than they are of state and national policy for education and its bearing upon their local situation (p. 5).

Local policy makers should be fully aware of state and national policies affecting vocational education. Local educational agencies are authorized by the states and operate under state laws. They must meet state requirements to be accredited and to receive state financial support. They must also meet federal accreditation requirements to be eligible for federal financial assistance. Therefore, they cannot make policies without state and national involvement. However, they should also be involved, to the extent possible, in the policy-making process at the state and national levels.

How Vocational Educators Can Assist Policy Makers

Professional vocational educators have two important responsibilities in assisting policy makers. They should be available to give advice about policy and they are expected to implement the policies enacted.

In carrying out their responsibilities regarding the policy-making process, vocational educators are expected to cooperate with several other groups. At the national level, the National Advisory Council for Vocational Education, the U.S. Office of Education, and professional organizations such

30

as the American Vocational Association should be involved. At the state level, the state advisory council for vocational education, the state planning group for vocational education, the state department of education, and professional organizations such as the state vocational education association need to be involved. And at the local level, local advisory committees, the department of education, and professional vocational education organizations should be included.

If vocational educators, groups representing vocational education, and the general public are properly informed about the basic principles, goals and objectives of vocational education, their assistance should be exceedingly valuable to policy makers for vocational education at all levels.

The Educational Decision Maker's Contribution to Comprehensive Planning

Achieving the goals and objectives of vocational education at all levels requires careful thought, comprehensive planning, and positive action by those responsible for the program. Educational decision makers must be directly involved in the review and development of policy that will guide comprehensive planning for vocational education.

Sound policies are needed to chart the course for comprehensive planning throughout this country. Policies are necessary if planning is going to fulfill its intended purposes. What policies are needed to support comprehensive planning for vocational education? Should existing policies be reexamined and possibly restated in light of present conditions and future needs? These questions must be answered in the affirmative if a viable program of comprehensive planning is to be developed and maintained for vocational education.

Standards for Policy Development

In the absence of policy, expediency often prevails. Perhaps this can be said about some of the planning for vocational education that has been done in the past. The call by the federal government for a state plan has often resulted in the state's merely fulfilling the requirements set forth in the rules and regulations issued by the U.S. Office of Education to achieve compliance with the law.

The planning effort should be oriented to the basic principles of vocational education alluded to by Barlow (1975). It should also be guided by the role of vocational education as perceived by the planning unit. This means that acceptable standards for the development of policy for vocational education must be understood and accepted by the leaders responsible for vocational education. The basic principles of vocational education should be constantly reviewed and strengthened as new insights dictate.

The basic principles of vocational education should serve as the standards for policy development. Policies developed on the basis of such standards should be reflected in the process of comprehensive planning.

They should also be evident in the programs resulting from the planning effort, which should be guided by the operational plan.

One of the first steps that should be taken before any planning is undertaken is to identify the standards or basic principles which can be generally agreed to by those who will be guided by the plan. These standards should establish the perimeter of the total planning effort. Otherwise, the plan could be so broad that it would not focus on the objectives of vocational education, or it could be so narrow that it would not encompass the needs for occupational preparation.

New Mandate for Comprehensive Planning

In the past, much planning has dealt with the administrative responsibility of the planning group and the resources such as institutions, teachers, equipment, and funds that are available to carry out the program.

The Education Amendments of 1976 are rather explicit with respect to planning requirements. The act states that:

> The five-year state plans shall be submitted to the Commissioner by the July 1st preceding the beginning of the first fiscal year for which such plan is to take effect, and shall—
>
> (1) assess the current and future needs for job skills within the State and, where appropriate, within the pertinent region of the country, through consideration of the latest available data of present and projected employment, including the data available under section 161;
>
> (2) set out explicitly the goals the state will seek to achieve by the end of the five-year period of the state plan in meeting the need for particular job skills identified through the assessment undertaken in accordance with paragraph (1), including:
>
> (A) a description of these goals in terms of—
>
> > (i) the courses and other training opportunities to be offered to achieve those skills,
> >
> > (ii) the projected enrollments of those courses and other training opportunities,
> >
> > (iii) the allocations of responsibility for the offering of those courses and training opportunities among the various levels of education and among the various institutions of the state, and
> >
> > (iv) the allocations of all local, state, and federal financial resources available in the state among these courses and training opportunities, levels of education, and institutions within the state (section 107[b]).

Areas with a Need for Policy

Inherent in the legislative requirements are policies which the Congress has established; namely, that:

1. State planning must take into consideration current and future needs for job skills.

32

2. State planning must take into account courses and other training opportunities to achieve the needed job skills.

3. State planning must consider the projected enrollments in courses and other training opportunities.

4. The state plan must include vocational education programs for youth and adults of all ages, based on the stated purpose of the amendments to provide the opportunity for persons of all ages to have ready access to vocational education of high quality which is realistic in light of actual or anticipated opportunities for gainful employment and which is suited to their needs, interests, and ability to benefit from such training.

It should be a policy that the state plan for vocational education be a blueprint for serving the occupational preparation needs of all the people in each state. It is not enough to plan merely for those who, because of compulsory school attendance laws, choose vocational education in lieu of other educational programs.

Role of the Planning Unit

The state plan should include all the program facilities—both public and private—that could be used to serve the occupational preparation needs of the people. The state planning unit should then determine which portion of the plan the state has the capability and resources to carry out. It should also help identify those portions of the plan which could best be handled by others. This does not mean that the state planning unit would dictate the vocational education programs to be handled by each component of the vocational education delivery system. Instead, the role of the state planning unit should be to bring together all agencies and institutions that wish to have a part in conducting vocational education programs, assist them in reaching mutual agreement on their respective roles, and coordinate their activities.

Vocational education must be tied closely to the needs of the job market. Thus, it needs to be involved in the planning for economic development which should be done on a national, state, and local basis. It should be a policy of every vocational education planning unit to help integrate the state plan for vocational education into the total economic development plan for the state.

Measurable Objectives Required

There is need for a policy to structure plans on the basis of objectives that can be measured. Broad goals should be formulated for each program; for each goal, specific measurable objectives should then be developed. The overall program plan should include a time line, or Program Evaluation and Review Technique (PERT) chart, specifying who has the responsibility for carrying out each objective and what resources are available.

When feasible, the operational plan should rank all objectives in order of priority. This is usually essential because of limited resources to carry out the program. Priority ranking often becomes difficult because of too many fixed variables. In this regard, the allocation of available resources may affect the status of individuals employed in the program. However, this problem must be faced on an objective basis. When federal funds are used in implementing state and local plans, national priorities must be considered. Often it might appear that state and local priorities have taken second place. However, this requirement should not affect the overall planning effort because, in most cases, the amount of state and local funds involved would far exceed the amount of federal funds. Although planning for vocational education must address national concerns when federal financial assistance is involved, state and local priorities should be adequately taken care of because of the heavy financial support that would be expected from state and local efforts.

Use of External Groups

Another policy implicit in the Education Amendments of 1976 is for planners at the national, state, and local levels to ask for input from external groups (i.e., business, industry, labor, and the general public); the extent to which these groups are used and how they are used, however, must be a matter of national, state, and local policy.

In some cases external groups have been merely tolerated, while in other situations they have been used effectively. Clearly defined policies pertaining to the use of external groups in the planning process should be developed. Such policies should give external groups every opportunity to express their views and should require the policy-making board, which manages and controls vocational education, to give its reasons for accepting or rejecting the recommendations received from such external groups.

The need for other policies should be expected to emerge as the planning process matures. Planners should always be alert to areas of concern where new policies need to be considered and adopted.

Need for Coordination and Cooperation

Vocational education is one of several nationwide programs which are providing job training at the prebaccalaureate level for youths and adults. These job training programs are being conducted with limited financial resources and are intended to serve the wide range of job training needs people have.

Coordination and cooperation in planning for vocational education is needed (a) to effectively utilize the limited resources among the multiple agencies engaged in job training, (b) to provide continuous improvement in the instructional programs, and (c) to keep vocational education attuned to the dynamics of the economy and society. Multiple agency coordination and cooperation in planning for vocational education has always been assumed to be a good idea, but it is now required in the Education Amendments of 1976. If coordination and cooperation with other agencies and institutions is to be effective, vocational administrators at each level of vocational education must have a plan for involving these agencies and institutions.

Multiple Agencies and Limited Resources

Recent federal legislation has recognized the need for coordination and cooperation among the job training agencies of the nation and has required multi-agency coordination and cooperation. The rationale for the legislation is the number of agencies providing training, the range of regular and special needs to be served, the limited resources available for the training programs, and the need for highly effective training programs.

Legislated coordination and cooperation. The Education Amendments of 1976 require a wide range of involvement in the planning process. The thread running throughout the amendments is coordination and cooperation with other agencies, particularly in accomplishing the planning for vocational education. It is expected that individuals and agencies with a vested interest in the program shall be involved in all aspects of the planning process. The agencies and individuals with whom coordination and cooperation are to occur include:

1. National, state, and local advisory councils designed to give broad and comprehensive input to vocational education planning and related functions. Membership of the councils is specified to assure inputs from related agencies and groups.

2. National and state occupational information coordinating committees for providing manpower supply-and-demand information for state and local planning in vocational education and other training agencies. Membership of the national committee includes vocational education and Department of Labor officials. Membership of the state committee includes representatives from the state board for vocational education, state employment security, state manpower council and agency, and vocational rehabilitation.

3. A planning committee in each state to assist with the preparation of state plans. Membership includes representatives from 10 education, training, and related agencies who are to be involved in the preparation of five-year and annual plans.

Additionally, public hearings are required to be conducted throughout all regions of a state by the state vocational education agency to provide an opportunity for all segments of the population to give their views on goals, programs, responsibility for programs, and allocation of resources.

Other legislation. Other federal legislation which impacts on vocational education and calls for coordination and cooperation in planning includes:

1. *Comprehensive Employment and Training Act (CETA) of 1973 and its amendments.* The purposes of CETA are: (a) to establish a system of state and local programs to provide job training, employment opportunities, and community services for the economically disadvantaged; and

(b) to assure that training and other programs lead to employment and self-sufficiency.

One of the recent amendments to CETA which requires extensive coordination and cooperation is the *Youth Employment and Demonstration Project Act (YEDPA) of 1977*. This act established a year-round program of training and employment in cooperation with public schools, the U.S. Departments of Agriculture and Commerce, and other public agencies. The purpose of YEDPA is (a) to employ and increase the future employability of youth 16-24 years of age, (b) to help coordinate and improve existing career development, employment, and training programs, and (c) to test different approaches in solving the employment problems of youth.

2. *The Youth Conservation Corps (YCC)*. The YCC provides work for youth during summer months on a federal cost-sharing basis: (a) to accomplish needed conservation work on public lands, (b) to provide gainful employment for youth (ages 15-18) of disadvantaged social and economic backgrounds, and (c) to develop an understanding and appreciation of the natural environment.

3. *Public Work and Economic Development Act Amendments of 1976*. The purpose of this act is economic rehabilitation in areas where long-term economic deterioration has occurred or is taking place. Section 118(a) of the act includes programs authorized under the Vocational Education Act of 1963 among the activities eligible for funding.

4. *Education for All Handicapped Children Act of 1975*. This act charges state and local agencies with the responsibility of providing a full and appropriate public education for all handicapped children who are 3 to 21 years of age. This act opens vocational education programs to handicapped students, some of whom may need assistance beyond the conventional equipment, facilities, and instructional materials and methods in order to succeed in the program.

5. *Rehabilitation Act of 1973 and Amendments of 1974*. Section 504 of the act prohibits discrimination against a handicapped person by any program of instruction receiving federal funds. The Amendments of 1974 call upon all federal agencies to cooperate and assist in meeting the needs of the handicapped.

6. *Appalachian Regional Development Act*. This act was passed in 1965 and provides for a coordinated approach for developing resources and services—including vocational education, natural resources, transportation, health, community services and housing, and other related resources and services—essential to the further development of the region. The area includes West Virginia and parts of twelve other states extending from southern New York to northern Mississippi.

Other federal job training programs. Better coordination and cooperation are also needed with job training programs conducted by other agencies of the federal government. A wider involvement with other federal training programs could contribute to identifying more accurately the supply and demand for trained employees, sharing in technological development in occupational fields, exchanging curricula and other instructional resources, and related areas of concern that are common to job training programs. A partial list of the departments of the federal government and examples of their job training programs follow.

1. *Department of Health, Education, and Welfare.* Vocational education, vocational rehabilitation services, and welfare training programs.
2. *Department of Labor.* The Comprehensive Employment and Training Act (CETA) programs, Youth Conservation Corps, and Employment Security Service's job placement services.
3. *Department of Defense.* Several job training programs and supporting services conducted by each branch of the military, and schools for civilians conducted at major military bases, particularly overseas.
4. *Department of Agriculture.* Extension services offering adult and youth educational programs in all states and counties of the nation; the training provided to persons engaged in crop allotment programs; and a range of related services to farms, food processing, and testing for grades and standards applicable to the farmer and the consumer.
5. *Department of Justice.* Law enforcement and criminal technology programs.
6. *Department of Interior.* Naturalist, forestry, and related training programs associated with the nation's parks and natural resources.
7. *Department of Commerce.* Training programs associated with economic development and related agency programs and services.

While data are not available on the federal aid for prebaccalaureate job training programs by department, according to the budget of the U.S. government (FY 1979), the federal aid for all education across federal departments and agencies totaled $20.438 billion of actual expenditures in 1977, and the budget estimate for 1979 is $22.746 billion. The top seven agencies in receipt of federal aid for education, listed by amount in billions of dollars expended for education in 1977, are the U.S. Office of Education, $7.691; other areas of the Department of Health, Education and Welfare, $3.505; Veterans Administration, $3.406; Department of Agriculture, $3.063; Department of Defense, $1.382; Department of Labor, $.462; and Department of Interior, $.257 (Special analysis, 1977, p. 227).

Anyone familiar with education and job training must conclude that there are extensive job training programs being conducted by a range of federal agencies. Coordination and cooperation between vocational education and all federally supported job training programs could contribute to program improvements and more efficient spending of the taxpayer's dollar at the local, state, and federal levels.

There is a top-down ripple effect reflecting the productiveness of inter-agency coordination and cooperation, whether it results from memoranda of understanding or from legislated joint efforts such as the National Occupational Information Coordinating Committee (NOICC) involving the U.S. Office of Education and the Department of Labor. State level agencies seldom press further in inter-agency efforts than their federal level counterparts have demonstrated and practiced. And local level vocational education agencies are often dependent for success on the state interagency efforts such as the State Occupational Information Coordinating Committee (SOICC), which provides information for state and local planning.

Private job training programs. Job training programs are conducted extensively through private trade and technical schools, business and industry training, and apprenticeship programs. Coordination and cooperation with these programs in planning for vocational education would aid in more efficient utilization of resources and technology.

1. *Private trade schools.* The number of private vocational trade and technical schools (profit and nonprofit) and their enrollment continue to increase, according to trade school and accrediting associations. Estimates indicate that there are over 10,000 private schools with an annual enrollment of over 3.3 million. All but four states recognize private trade schools through licensing programs. The agency in each state which conducts the licensing program can identify state accredited private schools with whom planning coordination and cooperation would be expedient. In addition, there are several national agencies which provide leadership and accreditation services for private schools.

There are three national agencies which serve most of the private vocational programs: the National Association of Trade and Technical Schools (NATTS), the Association for Independent Colleges and Schools, and the National Home Study Council. Other agencies serving selected trades and technical fields are: Accrediting Commission for Business Schools, American Association of Nurse Anesthetists, Council on Dental Education of the American Dental Association, Engineers Council for Professional Development, American Board of Funeral Service Education, Council on Medical Education of the American Medical Association, Accrediting Bureau for Medical Laboratory Schools, National Association for Practical Nurse Education and Service, and the National League for Nursing (Kay, 1973, ix-x). National and state professional and trade associations should be utilized whenever questions arise concerning private trade and technical schools.

2. *Business and industry training programs.* Training programs operated by business and industry are conducted by employers throughout the country. Their beginning predates both public and private schools and includes technical centers, institutes, trade schools and other training programs. Additionally, many employers participate in local job training programs affiliated with the National Alliance of Businessmen (NAB).

The American Society for Training and Development recently estimated that business and industry expend $30 to $40 billion annually for formal and informal training programs. In a national study of education in industry, the Conference Board, Incorporated, reported that firms with 500 or more employees expended $2 billion for education in the 1974-75 fiscal year, a time of severe recession. Eighty percent of this expenditure was for in-house training programs (Lusterman, 1977, p. 12).

3. *Apprenticeship programs.* The Bureau of Apprenticeship Training (BAT) of the U. S. Department of Labor reported that training in 1975 included 41,000 apprenticeship programs offering training in 415 recognized skilled occupations. The number of apprentices receiving training in 1975 was 368,000, including 83,000 new apprentices. Most apprentices are trained under joint employer-labor union agreements *(Employment and Training Report of the President,* 1977, p. 67).

Vocational education planning should involve coordination and cooperation with these private sector programs to avoid wasteful duplication of program offerings. Additionally, opportunities should be explored for purchase of employment training through contracts for services. Purchasing training from another agency is particularly appropriate where training needs are relatively small, excessive amounts of resources are required for facilities and equipment, and training can be purchased more cost-effectively than can be provided with public dollars. Authorization to contract with private sector agencies for training programs is provided in the Vocational Education Amendments of 1968 and the Education Amendments of 1976. The extensive experience and resourcefulness of private training is too great to be ignored by vocational education. Leaders in trade schools and their associations, state accrediting agencies, employer based training programs, and apprenticeship program coordinators should serve as links to enlist the private sector in coordinated and cooperative planning.

Coordination and cooperation within vocational education. Vocational education is the largest job training program in the nation and its total enrollment exceeds the combined enrollment of all the other public-supported job training programs. In 1975 the enrollment for vocational education nationally was over 9,400,000 secondary students—approximately one-half of the nation's secondary school enrollment, almost 2,000,000 postsecondary students, and over 4,000,000 adult students (Lee, 1976, p. 72).

Instructional programs being conducted by a variety of secondary and postsecondary agencies include any agency designated as a local recipient under a state's five-year plan and annual program plan for vocational education (Education Amendments of 1976, pp. 2177-2178). Agencies which typically conduct programs include comprehensive high schools, area vocational schools, adult high schools, residential schools, community and junior colleges, technical institutes, Indian reservations, and correctional institutions. Multiple secondary schools, postsecondary institutions, and other agencies often operate vocational education programs in the same geographic and labor market area.

These overlapping conditions frequently involve a separate board for each school and institution and result in strong turfsmanship efforts such as competition for resources and uncoordinated resource allocation for programs and supporting services. States should provide leadership to achieve the needed coordination and cooperation by requiring the secondary schools and postsecondary institutions and other agencies offering vocational education programs in a county or metropolitan area to coordinate the preparation of local plans. A joint local planning effort would produce the program coordination needed to eliminate wasteful duplication of programs and special services and provide for wider involvement of agencies and individuals who can more accurately and comprehensively identify the current and emerging employment needs of a local area.

Improvement of Instructional Programs

Instructional programs are the mechanisms within the vocational education delivery system which enable people to acquire the knowledge and skills needed for employment in various occupational fields. Coordination and cooperation are needed in planning vocational education so that instructional programs can undergo continuous improvement in technical content and methods of instruction and gain the support from allied and related agencies needed to conduct instructional programs for regular and special needs students. This larger involvement is needed to enable the heterogeneous mix of individuals to gain the preparation required to enter and progress in a changing employment setting.

Content and methods of instruction. The content of instructional programs and the instructional methods utilized should be continuously monitored and updated to keep pace with changes in employment demands and innovative teaching techniques. Changes frequently occur in the labor market, including the use of new materials and equipment and associated work tasks. Such changes should be made in the classrooms and laboratories as they occur within an occupation so that materials and equipment are the same or similar in sophistication to those used in work settings.

Opportunities for learning and acquiring new information are abundant. Highly specialized communications via television, radio, video and audio recordings, and other media are common to many homes, libraries, and other community agencies. Instructional methods and procedures need to be continuously updated and improved. Instructional programs must be interesting and exciting if they are to be effective in teaching individuals the knowledge and skills needed to obtain jobs and become self-sufficient, contributing citizens. Planning, coordination, and cooperation with the community can help keep instructional programs updated in content and technology.

Allied and supporting agencies. Increasingly the commonalities between education and life are being recognized. Vocational education must serve a wide range of individual needs which often require services and assistance delivered by agencies outside vocational education.

Planning for vocational education should involve health, social service, and other agencies that can assist in identifying training needs and in planning occupational courses and special services. Coordination and cooperation, in this case, should aim to provide the instructional programs and supporting services needed for the physically handicapped, culturally disadvantaged, and other persons with special needs who seek to complete a vocational education program.

Recent legislation, including the Education Amendments of 1976, the Education for All Handicapped Children Act of 1975, and the Rehabilitation Act of 1973, has broadened the responsibility of vocational education and other public education to provide free and equal educational opportunity for handicapped persons, including those who require specialized assistance for maximum learning. Special assistance varies considerably, depending upon the individual's needs, and may involve medical services, counseling, basic education, special transportation, and facilities. Neurological and other basic learning problems, limited physical coordination, visual and hearing impairment, facility accessibility, and equipment adaptation are some of the areas where supporting services are needed. Such diverse needs require inter-agency coordination and cooperation in planning and should involve vocational education, vocational rehabilitation, public education in general, medical and health agency services, and other agencies which may be needed in the delivery of vocational education programs that are effective for the human needs to be served.

Dynamic Economic and Societal Needs

Dynamic economic and social changes have far-reaching implications for job training programs. Coordination and cooperation among business, industry, social service agencies, government, and the lay public are essential for planning vocational education programs. This interaction is needed so that the programs and services meet the employment requirements resulting from changes in technology, new employment opportunities, and changes in society.

Changes in technology. Technological changes in today's world continue at a swift pace. Consider the field of automobile technology and its far-reaching effects on the job training scene. Technological changes include catalytic converters, more specialized transmissions, the advent of engines requiring lead-free gasoline, increased use of electronics, the proposed use of air bags for passenger safety in collisions, increased use of plastics in the manufacturing of auto parts, and growing trends toward unitized replacement parts. The auto service center or repair shop is the scene of rapid change. Because of advances in technology, the car repair that was done last year at a neighborhood garage may no longer be performed by that garage. Specialized garages and service centers such as transmission repair shops and brake shops emerge to serve the changes in technology. How many garages or other employers of graduates of a local auto mechanics training program must experience such changes before the local vocational education program is altered? That is the kind of question that requires extensive coordination and cooperation in the planning process by persons knowledgeable of the changes in the occupations served by vocational education programs and those knowledgeable about the needs of students from the diverse segments of this society.

Most fields of employment are experiencing rapid technological changes: horticulture, with its newly developed chemicals and plant hormones; construction, with the new energy codes and standards; manufacturing, with new instrumentation and control mechanisms; health occupations, with the new digital thermometer and other new tools and techniques; sales, with the electronic calculator and inventory control update following each sales transaction; and business and office, with the typewriter and accounting machine used for programming to secure greater technical proficiency. Multi-agency coordination and cooperation in planning can keep vocational education programs attuned to changes in technology.

New employment opportunities. New and expanding fields of technology challenge the best efforts for coordination and cooperation. The employment needs for energy, ecology, and related fields are illustrative of new or expanding fields which may be addressed in only a limited way through current employment projections. For example, rapid developments in the construction of nuclear electric generating plants are creating unanticipated immediate employment needs in selected geographical areas for more skilled employees. One example is the actual requirement for 10 times more welders of light-gauge metals, carpenters, and masonry workers within four months than were indicated by earlier identified annual projection data pertaining to employment needs. Continuing involvement of leaders from state and local agencies and business and industry should provide the coordination and cooperation needed for realistic annual and five-year planning in vocational education.

Changes in society. Social changes are occurring at phenomenal rates, bringing new challenges to the planning of vocational education. Consider the changes in societal norms relative to women in the work force, second or third career changes, early retirement, and recreation and leisure time activities. The percentage of employed women has doubled since 1950 from approximately 25 percent to nearly 50 percent of the labor force, and the number of women in gainful employment is expected to increase continuously.

Career patterns of workers indicate increasingly frequent job changes. The current five job changes in a career is expected to increase to eight job changes by the year 2000. These jobs will include about three changes in career fields, thus requiring increased programs for retraining. Involvement of employers, employment agencies, and community leadership in the planning process will enable vocational education to plan for these needs.

Meaningful Coordination and Cooperation

Efforts for multiple agency coordination and cooperation in planning for vocational education can be carried out in a legalistic manner, including all the formalities of meetings with specific groups and obtaining their required sign-off, only to miss the spirit of the vocational education legislation for in-depth, realistic coordination and cooperation. Such legalistic efforts can also exclude other public and private agencies with active and productive job training programs, special services, and supporting resources.

Historically, vocational education has sought coordination and cooperation of the public through general advisory committees, craft committees, community service projects, and other practices. These efforts have often lacked the expanded involvement of training and related agencies, as evidenced by the specificity of the Education Amendments of 1976 relative to agencies and groups to be represented on advisory committees and the state planning groups. Even this expanded involvement is far short of the comprehensive coordination and cooperation possible with other agencies and groups to serve the purposes previously described. The larger task of developing and implementing a comprehensive strategy to achieve coordination and cooperation is incumbent upon vocational education, other education, job training, and related agencies at the local, state, and federal levels.

It is one thing to mandate and quite another to actualize the coordination and cooperation among agencies and interest groups with competing political machinery and economic goals. To actualize coordination requires a mechanism or catalytic agent among the agencies and groups; the resulting coordination and cooperation provide reciprocal arrangements and mutual benefits to all entities involved. Actualized coordination and cooperation should yield a network of appropriate agencies and groups from which necessary expertise is both recognized and employed.

A meaningful plan for coordination and cooperation should provide all agencies and groups with an "early warning" mechanism as to future changes in employment opportunities, technology, and human needs. Such changes may evolve from changing thrusts in economic development, monetary policies, availability of vital energy resources, legislation, judicial decisions, governmental priorities and goals, and other influences in local, state, national, and international settings.

Positive action by vocational education is essential to establishing and conducting meaningful interagency coordination and cooperation between vocational education and other agencies and organizations. Koble, Stahura, and Scritchfield (1975, p. 89) developed an organizational plan to produce interface between a local school and other agencies and institutions. The plan by Koble et al. served as the basis for the following strategy for developing inter-agency coordination and cooperation.

Plan for local, state, and national coordination and cooperation. This plan is designed for use at the local, state, and national levels by the chief vocational education administrator at each level. The goal of the plan is to develop meaningful inter-agency coordination and cooperation between vocational education and other agencies and institutions. The plan calls for the chief administrator to:

1. Develop a comprehensive list of organizations, agencies, and institutions engaged in or related to education, training, and employment services at the respective level, e.g., local, state, or national.
2. Identify the role of each group and how it can contribute to the delivery of vocational education programs.
3. Develop a formal, written memorandum of understanding with each appropriate agency describing the agency's desired role and involvement.
4. Assign a member of the staff as liaison to each coordinating and cooperating agency.
5. Develop and provide each agency annually with a formal pledge of support and cooperation.
6. Conduct a briefing annually, or more often as needs arise, concerning vocational education needs, programs, and activities.
7. Enable staff assigned as liaison to agencies to become involved in planning and related activities of agencies to which they are assigned.

Evidence of successful coordination and cooperation includes more efficient long-range planning, improved communication, more success in placing graduates, and more frequent achievement of job training program goals by all cooperating agencies and groups. Public evidence of successful coordination and cooperation is shown by citizens who refer to "our" schools, "our" vocational programs, and "our" teachers, *not* "the" schools, "their" shops, and "those" teachers.

Summary

Efforts to gain public coordination and cooperation must be through deliberate and continuous public involvement in planning. It cannot be superficial, just on special occasions, or when special public support is needed on a public tax support issue. There is no more genuine or effective means of initiating and fostering coordination and cooperation than through involvement of key related groups and individuals and the public in the development of annual and five-year plans for vocational education.

Intra- and inter-coordination and cooperation in planning vocational education programs are required if capital resources are to be efficiently utilized and the nation's human resources effectively developed. With increasing competition for limited available resources to meet critical public needs, vocational education is challenged to enlist the coordination and cooperation of all public and private education and job training programs and related agencies and groups in planning job training programs for the mutual benefit of all.

Is it not fair that the public be involved in planning the programs it finances to prepare people for productive employment? And is it not imperative that vocational education enlist the widest possible public input in the determination of needs to be served and the programs that will ameliorate the needs? A resounding "yes," and on with the most extensive public coordination and cooperation feasible in planning for vocational education. It is the law, but it has always been a good idea.

References Cited

Barlow, M. L. (Prog. Dir.) *Policy-making for vocational education*. Los Angeles: University of California, 1975.

Campbell, R. F., Bridges, E. M., Corbally, J. E. Jr., Nystrand, R. O., and Ramseyer, J. A. *Introduction to educational administration* (4th ed.). Boston: Allyn and Bacon, 1971.

Diez-Hochleitner, R. Educational planning. *Economic and social aspects of educational planning*. Paris, France: UNESCO, 1964.

Employment and training report of the president. Washington, D. C.: U. S. Government Printing Office, 1977.

Good, C. V. (Ed.). *Dictionary of education* (2nd ed.). New York: McGraw-Hill, 1959.

Hamlin, H. M. *Citizens participation in local policy making for public education*. Urbana: The University of Illinois, 1960.

Kay, E. R. *Directory of postsecondary schools of occupational programs 1971, public and private* (DHEW Publication No. (OE) 73-11410). Washington, D. C.: U. S. Government Printing Office, 1973.

Koble, D. E., Jr., Stahura, J. M., and Scritchfield, A. *A master plan for the administration of vocational education in the Nashville-Davidson county (Tennessee) metropolitan public schools*. Columbus, Ohio: The National Center for Vocational Education, The Ohio State University, 1975.

Lee, A. M. *Learning a living across the nation*, Vol. 5. Flagstaff, Ariz.: Northern Arizona University, 1976.

Lusterman, S. *Education and industry*. New York: The Conference Board, 1977.

Morphet, E. L., and Jesser, D. L. (Eds.). Cooperative planning for education in 1980, objectives, procedures, and priorities. *Designing education for the future*. Denver, Colo.: Project Office, 1968.

Special analysis, budget of the United States government, fiscal year 1979. Washington, D. C.: U. S. Government Printing Office, 1977.

Staats, E. B. *What is the role of federal assistance for vocational education?* Report to the congress by the comptroller general of the United States. Washington, D. C.: U. S. General Accounting Office, 1974.

U. S. Department of Health, Education, and Welfare. Administration of vocational education, rules and regulations. *Vocational education bulletin no. 1*. Washington, D. C.: U. S. Government Printing Office, 1966.

U. S. Department of Health, Education, and Welfare. *Education for a changing world of work.* Report of the panel of consultants on vocational education. Washington, D. C.: U. S. Government Printing Office, 1963.

Webster's new collegiate dictionary. Springfield, Mass.: G. and C. Merriam, 1976.

Webster's new world dictionary (2nd ed.). New York: William Collins-World Publishing Co., 1974.

Wolvek, J. *A comprehensive planning process for the state department of public instruction.* Des Moines, Iowa: State Department of Public Instruction, 1968.

Wright, L. W. *Developing comprehensive planning capability in state education agencies.* B. S. Furse (Ed.). Salt Lake City: Utah State Board of Education, 1969.

Selected References

Atteberry, J. W., Miller, W. R., and Pershing, J. A. *Improving vocational education planning: More myth than reality?* Columbia, Mo.: University of Missouri, Department of Practical Arts and Vocational-Technical Education, 1977.

Brieve, F. J., and Johnston, A. P. Meaning and problems of planning. *School Management 17(4),* April 1973.

Copa, G. H., and Geigle, E. K. *National conference for state vocational education planning staffs.* Minneapolis: Minnesota Research Coordinating Unit, University of Minnesota, 1976.

Hale, J. A. *A review and synthesis of research on management systems for vocational and technical education.* Columbus: The Ohio State University, Center for Vocational Education, 1971.

Hilton, E. P., and Gyuro, S. J. *A systems approach—1970, Vocational education handbook for state plan development and preparation.* Lexington, Ky.: Bureau of Vocational Education and The Research Coordinating Unit, 1970.

Koontz, H., and O'Donnel, C. *Principles of management: An analysis of managerial functions.* New York: McGraw-Hill, 1972.

Lecht, L. A. *Priorities for planning in vocational education.* Washington, D. C.: National Planning Association, 1975.

Morris, A. C. *Nature of planning and its relation to management.* Paris, France: Organization of Economic Cooperation and Development, October 1973.

Nowrasteh, D. M. *Planning and management systems for state programs of vocational and technical education: An application of research.* Columbus: The Ohio State University, Center for Vocational Education, 1971.

CHAPTER 2

A STRATEGY FOR COMPREHENSIVE PROGRAM PLANNING

Jerome E. Moss, Jr. and David J. Pucel

Planning is the process of making decisions about future actions. It is a critique and readjustment of the present so that the future may be influenced. It is a way of influencing the future by our current acts. It is a process that uses information in an organized, rational way to make decisions about the future which are designed to attain desired ends more efficiently.

Decisions about future actions are a necessity when there are viable alternatives for the use of limited resources. Since our society is characterized by competition for limited resources, planning is inevitable. In order to maximize the utilization of available resources, decision makers must select carefully among the competing claims for them. In making the selection, the relative social desirability of various ends, as well as the relative efficiency of different means to those ends, often need to be determined and considered.

Since people do not usually agree totally on means and ends, the selection of information to be used in the decision-making process and the manner in which the information will be utilized is accomplished through a political process. Further, most decisions of this type involve the application of value orientations and theoretical positions, as well as facts and empirically established principles.

Selecting among alternatives requires making choices among values, and the state of our knowledge about the world demands that we frequently make educated guesses to decide what can be done and how best to do it. Consequently, planning is not only an inevitable political process, it is almost always a subjective process. The challenge is to make the subjectivity as rational as possible. Those affected by the decisions should be able to see rationality behind the decision making.

A View of Vocational Education Planning

The following is one perspective from which planning in vocational education can be viewed. It is an attempt to provide rationality and explicitness to the process.

Vocational education can be perceived as part of a larger human resource development system which operates within an even larger democratic social system. In that context, vocational education has inputs from and produces outcomes for the larger systems. The kind and amount of input/resources vocational education receives, the limits imposed upon its mode of operation, and the nature of its outcomes are all determined in large measure by the larger systems. For example, legislators determine the size of the vocational education enterprise by the amount of funds they allocate to it. They also define the broad goals of vocational education on behalf of the public. Of course, vocational educators influence these planning decisions through professional organizations and other groups, but they are only one influence. After broad goals are established, vocational educators are then asked to make decisions concerning the product-mix of the system by deciding *when, where,* and *for whom* vocational programs will be provided (program planning). They control the production functions of the system by deciding *how* those programs will be implemented (e.g., the curriculum, instructional mode, etc.), and they are responsible for the *quality control* of the system through assessing its products in terms of legislated goals.

Just as vocational education may be considered an instrumental subsystem within larger systems, vocational education has subsystems of its own (e.g., classroom instruction, teacher education, research and development). Each of these has its own inputs, processes, and products for which planning decisions must be made. Obviously, these subsystems must be closely interrelated in the comprehensive plan if the system as a whole is to operate at maximum efficiency.

Focus on a Strategy for Program Planning

Although planning for each of the vocational education subsystems is important, the remainder of this chapter will focus upon a strategy for making one kind of planning decision—program planning. In simple terms, program planning is the process of deciding to train X people in Y occupation at Z school next year. The strategy described is applicable to statewide planning as well as to a single institution. The process of program planning was chosen as the subject of this chapter because the need for improved statewide program planning has been highlighted by the Education Amendments of 1976, and because the need to decide which programs will be initiated, expanded, or eliminated is a basic recurring decision that must be made following each federal, state, or local appropriation for vocational education.

Characteristics of the Planning Strategy

Any useful strategy for vocational education program planning should have at least four basic characteristics. First, it should help the field move toward a rational approach to decision making that will maximize the outputs from available resources. At the moment there is little agreement in the field on the specific mix of outcomes that represents maximization. Thus, the strategy should require that the specific values and ends used in the decision-making process be made explicit, thereby encouraging and focusing continuing debate about them. Second, the strategy should encourage zero-based budgeting decisions; that is, it should be applicable to periods of retrenchment (cutting programs) as well as expansion (adding programs). Third, the strategy should go beyond the traditional process of disjointed incrementalism, which permits changes at the margin rather than change in major direction. Finally, a useful strategy should prioritize vocational programs so that variations in resource allocation can be accommodated; the most important programs can be selected for implementation without resource limitations.

How to Approach Program Planning

Program planning is the process of deciding which kinds of educational curriculums a given school should provide at a given time and for how many students. For example, should the Jones Technical High School offer a commercial art curriculum? If so, should it plan to serve 100 students per year in that curriculum? After the program planning process results in a decision to offer a certain kind of curriculum (e.g., commercial art curriculum to enroll 35 students per year), other decisions on curriculum development must be made.

Curriculum development decisions concern the specific educational experiences to be provided within each curriculum. Thus, they differ from program planning decisions. Program planning decisions determine the variety, nature, and capacity of curriculums available to students in a given institution. Curriculum development decisions determine the specific kind and quality of educational experiences to be provided students who enter each curriculum. Program planning decisions affect the product mix of the vocational system output, while curriculum development decisions affect the quality of the output for a given occupational area.

Specifying Vocational Goals and Societal Values

The first major step in the proposed strategy for making program planning decisions is to identify an acceptable set of goals for public vocational education, taking into account relevant societal values. These goals and values form the base for determining the kinds of information to be used in assigning priorities to potential curriculums.

For example, will the dominant value guiding program planning be to satisfy the manpower requirements of society? Will the critical goal be to maximize the number of placements in positions related to the training curriculum? Or will the dominant value be the provision of "equal" accessibility to vocational education, with a key measure of success being the attainment of occupational satisfaction by the former student? These and similar questions must be answered if the planning process is to yield results (e.g., priorities) that are consistent with the value orientations of the group for whom the decisions are being made.

There needs to be broad participation in the process of identifying an acceptable set of goals and values. At the state level, legislators, the representatives stipulated for developing a state plan under current federal vocational legislation, and members of the state advisory council and the state board for vocational education should debate the issues. Granted, various constituencies may have different and sometimes competing concerns which strain the internal consistency of the outcomes, but if the decisions are to be accepted by such competing groups, they must arrive at some compromise before effective program planning can take place.

It is this striving for consensus (or at least compromise) through interaction that is the essence of the democratic (political) process, and it is in making decisions about the goals and values for the vocational education system that the public can and should make its most significant, lasting contributions. Vocational educators may then apply actual data in particular situations to the selected goals and values, using explicit procedures, in order to arrive at specific program planning decisions (Friedman, 1973).

Guiding Values in Planning Vocational Education

Table 1, "Planning Parameters: Guiding Values," summarizes one possible set of societal values and goals which could govern the program planning process. This information is taken from the work of Moss, Smith, and Copa (1972). Table 1 shows that the goal of public vocational education is to maximize the *mutual* satisfaction of the individual as worker and the employer (as a surrogate of society).

As for societal values, the dominant criterion is to provide everyone with ready access to vocational education that is suitable to his or her needs according to the stage of vocational development (such as exploration, preparation, retraining, etc.), interest (potentially satisfying occupations) and abilities (including provision for those with special needs). Significantly, efficiency as a societal value is applied in decision making only *after* the requirements of equal opportunity are satisfied (thereby providing equal opportunity as efficiently as possible). Table 1 shows two ways for making vocational education efficient: (a) to provide training at public expense only for occupations which will yield economic or employment advantages to the recipient (when compared with someone untrained), and (b) to provide training only for occupations which are *not* firm-specific.

Table 1
PLANNING PARAMETERS: GUIDING VALUES

A. Goals of Public Vocational Education

1. Maximize individual satisfaction from work context and work content.
2. Maximize societal satisfaction from worker performance and the relevance of his/her work role to the needs of society.

B. Societal Values

1. Provide equal educational opportunity that is
    a. For everyone (from school-age to retirement) who wishes to make use of the program and can benefit from it.
    b. Geographically, financially, chronologically accessible.
    c. Suitable to the individual's needs, interests, abilities.
2. Provide equal educational opportunity as *efficiently* as possible by
    a. Training only for occupations which yield economic or employment advantages.
    b. Training for occupations which are not firm-specific.

Given the preceding goals and pertinent societal values as planning parameters, the priority rating for implementing or continuing a specific vocational curriculum may be considered to be a function of the legitimacy of the curriculum and of its relative social and individual utility:

$$\text{Curriculum Priority Rating} = f(\text{Legitimacy}) + f(\text{Social and Individual Utility})$$

Testing Legitimacy

To be offered at all, a curriculum must first pass the test of legitimacy. If the curriculum is legitimate, then its relative social and individual utility determines its priority. The test of legitimacy consists of four questions, *all* of which must be answered affirmatively before the curriculum can be considered legitimate. These questions determine whether or not the public should support the curriculum:

1. Is it legal to offer the curriculum?
2. Is the curriculum consistent with public morality?

3. Will completion of the curriculum result in economic or employment advantage(s) for graduates?

4. Are the skills to be taught applicable in more than one firm (transferable across jobs in an occupation)?

The first two questions are common enough. Unless the last two questions are also posed and answered affirmatively, however, vocational education will be providing training that can be done more efficiently on the job, or the public will be paying for training whose cost should be borne by private enterprise.

Assessing Social and Individual Utility

Presuming the curriculum passes the four legitimacy test questions (or others adopted by relevant constituencies), the priority ratings of curriculums should then depend upon their relative social and individual utility. Social and individual utility is a function of the following four factors:

$$\text{Social and Individual Utility} = f(\text{Program Purpose} + \text{Occupational Value} + \text{Quantitative Demand} + \text{Curriculum Effectiveness})$$

Program Purpose. Career development theory and common sense indicate that most individuals have different kinds of training needs at different stages of their careers. They may require career awareness/orientation, exploration, preparation, retraining, updating, or upgrading. The public frequently places different values upon satisfying each of these needs, and those values change with societal conditions. For example, in times of high adult unemployment, the greatest value is likely to be placed on satisfying retraining and upgrading needs. Similarly, the public tends to differentiate the value it places on serving certain groups of people such as the disadvantaged, handicapped, etc. These emphases change over time.

The kind of training needed and the particular group to be served comprise what we will call "program purpose." Table 2 depicts one way the kind of training needed and the group to be served can be displayed so that representatives of the public (such as legislators, the planning group for the state plan, local school boards, advisory committees, etc.) can be helped to express their views on program purposes.

Each cell in Table 2 would contain a number expressing the relative mutual satisfaction (to society and the individual) to be obtained by serving a particular need of a designated group. The effect on priorities of applying the relative values assigned to program purpose would be to raise the priority of curriculums whose purposes are considered to have greater societal value than other curriculums. (The use of "set asides" in current federal legislation reflects the concept of applying relative social value to vocational programs with different purposes.)

Table 2
PROGRAM PURPOSE: SOCIAL VALUE

Group Served	Kind of Need						
	Awareness/ Orientation	Exploration	Preparatory		Retrain	Update	Upgrade
			Secondary	Postsecondary			
Regular							
Disadvantaged							
Handicapped							

Occupational value. Society places relative values upon different occupations. One of the ways it expresses those values is through income to the individual. The greater the earned income, the greater society presumably values (in an economic sense) the occupation and the greater value it is to the individual. Especially in a free, open economy, income is a crude index of the "qualitative" need by society for persons in that occupation. In the Soviet Union, for instance, teachers are paid more (and are valued more) than doctors.

In addition, the cost of occupational training (to society and to the individual) varies among curriculums. The greater the cost of training to society and to the individual, the less desirable it becomes to provide a certain curriculum. Consequently, one index of the relative economic value of providing a particular occupational curriculum might be as follows:

$$\text{Occupational Value} = \frac{f(\text{Income to Individual})}{\text{Training Cost}}$$

This index reflects the relative potential economic benefit of offering the curriculum. As the value of the ratio increases, so will the relative priority assigned to the curriculum. When the index is computed for existing curriculums, the cost of adding each additional student can be used in the ratio; when the index is computed for proposed curriculums, the estimated average cost per student can be utilized. Of course, if the curriculum under consideration is intended to satisfy awareness/orientation or exploratory needs, this index would not be applicable in assessing social and individual utility because the curriculum would not be designed to prepare wage earners.

Quantitative demand. The relative quantitative demand for providing an occupational curriculum is determined by considering the demand by individuals for training in that occupation along with the employment opportunities for people in that occupation.

In order to elaborate upon and to clarify the above statement, the following paragraphs dealing with quantitative demand will treat (a) means for estimating future societal demand for workers, (b) a method for estimating the demand by individuals for training in a particular curriculum at a given time and location, and (c) procedures for combining the information about societal demand and individual demand to formulate an index of relative quantitative demand.

1. *Estimating future societal demand for workers.* Planners use at least three ways to estimate the future societal demand for workers (usually defined as the number of unfilled positions by occupation at a given time and place). First, they employ projection techniques (such as the Department of Labor projections) to extrapolate present and past trends to the future, assuming little or no social planning or deliberate intervention. Second, planners ask employers to estimate their future manpower requirements. The resulting estimate reflects private enterprise's perception of its need for the assistance of public education. Third, manpower planners working in conjunction with economic developers determine the kind and number of workers society will need in order to accomplish specified socioeconomic goals (Lecht, 1969). Thus, when a state trains a given number and kind of workers in the hope that this resource will be utilized to expand or create needed industries, or when scientific and technical workers are trained to support a planned national effort, like sending a manned vehicle to Mars, vocational education is being used as a tool for social intervention.

Regardless of the method used to estimate the societal demand for workers, educational planners frequently fail to assess the impact of internal labor market mobility (geographical and occupational) on their demand estimates. Further, since knowledge about the mobility of graduates is often sketchy at best, it is difficult for planners to define realistic geographical labor market areas within which estimates should be made. This problem becomes especially acute when local school estimates of manpower demand are aggregated at the state level and the amount of overlap among labor market areas is unknown (but likely to be great).

One final difficulty to be noted in the estimation of societal demand for workers is the variation in the required length of time for the projection. Planning curriculums to satisfy awareness/orientation needs requires long-range predictions for clusters of occupations, while planning to satisfy updating training needs requires precise, short-range estimates for specific occupations.

2. *Estimating demand by individuals for a particular curriculum.* Estimates of the demand by individuals for training in a particular curriculum at a given time and location are also important in formulating assessments of quantitative demand. Those that are made are almost always confined to asking questions of in-school youth about their future plans. Yet if vocational education is to adopt a set of goals and societal values to

provide equal access to all people, it is essential to determine the nature and extent of the demand by out-of-school as well as in-school populations. Copa and Maurice (1976) conducted a study to experiment with a technique for reaching the total population. They utilized a household survey technique to gather data about individuals' training needs, occupational interests, and special abilities, as well as their desire to attend public vocational programs and perceived barriers to attendance. The findings of the study were used to plan the programs of a new vocational school in a large metropolitan area.

It is obvious that many problems are involved in obtaining useful estimates of both the societal demand for workers and the demand of prospective students for training. But a particularly vexing problem for planners is how to use these data in decision making. Should curriculums be planned to accommodate all the individuals who want to receive training? Should curriculums be provided only when there is adequate demand (jobs) for graduates? What impact should local and changing economic conditions have upon planning? These kinds of critical questions can only be answered by examining the goals and values for vocational education.

3. *Procedures for formulating relative quantitative demand.* Two methods of using data about the demand for workers and student demand data are presented in the following paragraphs. They provide two viable alternatives for arriving at a useful estimate of relative quantitative demand. The two alternatives are (a) the "optimal" demand approach and (b) the "unmet" demand approach.

The first technique is designed to produce an estimate of optimal demand which is then compared with actual individual demand data and existing curriculum capacity to yield indices of relative quantitative demand. Optimal demand is computed by using actual societal demand and individual demand data. This results in a *theoretical* demand for training by individuals which most closely approximates the ideal. While there are probably as many ways of formulating optimal demand figures as there are sets of goals and values for vocational education, if the particular set expressed in Table 1 is accepted, then the following procedure is suitable for computing optimal demand.

The procedure for computing optimal demand assumes that potential students have had an opportunity to express their interest in enrolling in publicly sponsored vocational education programs (as opposed to privately operated programs), and that the occupations for which they wish training are "legitimate" (according to the four questions stated earlier in this chapter).

For each *preparatory or retraining curriculum,* optimal demand is equal to (a) the *total* number of individuals in the state who report they want to avail themselves of publicly sponsored preparatory training or retraining in occupations which have been judged to be "legitimate," multiplied by (b) the *proportion* of statewide demand for unfilled positions in each "legitimate" occupation. The proportion of statewide demand for unfilled positions is equal to the number of workers needed in a particular "legitimate" occupation divided by the total number of workers needed in "legitimate" occupations. (Statewide demand for unfilled positions is assessed for the time graduates are expected to enter the labor market, and may be estimated by projections or employer surveys, or may be fixed to satisfy the requirements of economic development plans. Local occupational and individual demand data may be substituted for statewide data if planning is being done to serve a local community and provided the geographic mobility of graduates is expected to be limited).

This procedure for computing optimal demand operationalizes the belief that vocational education preparatory and retraining curriculums should be made available to all those who want, and presumably can benefit from, vocational education—thereby providing equal access. Thus, the total number of training stations projected by this method in the state or local community would accommodate everyone who wanted training, but the stations projected for each preparatory and retraining curriculum would be proportional to the actual demand for graduates in that occupation.

The stated procedure for computing optimal demand reflects an attempt to maximize both individual and societal satisfactions under conditions of imbalance. Where total individual demand exceeds total societal demand, individuals would be trained in order to provide them an equal opportunity to obtain available positions now and in the future. In any event, under optimal demand, individuals wishing training would be trained in the same proportions as they are needed by society.

The procedure concedes that vocational educators are not responsible for the number or kind of unfilled positions provided by society at a given time and place, but acknowledges that vocational educators *are* responsible for maximizing individual and societal satisfactions under existing conditions. The procedure further presumes that, if in the long run, individual demand consistently exceeds societal demand, society will change its cultural values (e.g., reduce incentives to work), change its work role requirements (e.g., shorten the work week), or create new work roles such as public employment positions.

Note that the supply of newly prepared or retrained workers from other private or public training programs is not taken into account directly by this procedure for determining optimal demand. This is because (a) actual individual demand is based upon the expressed desire of persons for publicly supported vocational training, and (b) occupations have already been eliminated from training consideration if they are firm-specific, if they can be learned more efficiently under informal conditions (and thus would not result in an economic or employment advantage if taught in school), or if they are viewed as not being legitimate to offer as public vocational programs for other reasons.

Optimal demand for a curriculum to serve *upgrading needs* is equal to the number of individuals in the labor force in the local community who express a desire for publicly supported vocational training in order to be promoted to a particular (non-firm-specific) occupation. (The training should be only that which can be done most efficiently in a formal educational setting, rather than on the job, so that it will result in an economic or employment advantage to the recipient.)

Optimal demand for curriculums to serve *updating needs* is equal to the number of individuals in the labor force in the geographic area to be served who express a desire for publicly supported vocational training in order to improve performance in the non-firm-specific positions they presently occupy.

Given the theoretical optimal demand figures for numbers of individuals who desire training in a particular curriculum, it is then possible to compare the optimal demand with the actual individual demand and with present curriculum capacity to yield an index representing relative quantitative demand. An example of how this might be done follows.

Table 3 contains an illustrative set of indices of relative quantitative demand as they might be used for preparatory or retraining curriculums. Actual individual demand is first compared with theoretical optimal demand in order to select the proper column of the table. Then present

Table 3

INDICES OF RELATIVE QUANTITATIVE DEMAND

(Preparatory or Retraining Curriculums)

Present Curriculum Capacity	Actual Individual Demand		
	Same as Optimal Demand	Higher than Optimal Demand	Lower than Optimal Demand
Less than Optimal Demand	9	8	7
Same as Optimal Demand	6	5	4
Greater than Optimal Demand	3	2	1
Eliminate	0	0	0

curriculum capacity is compared with optimal demand to select the proper row of the table. The number in the cell intersecting the proper column and row is the index of relative quantitative demand. When actual individual demand is the same as optimal demand, the index number is "9"—the highest possible value (in this illustration). Conversely, when actual individual demand is lower than optimal, and curriculum capacity is greater than optimal, the relative quantitative demand is very low (1).

The rationale upon which index numbers are assigned to cells gives the highest value to curriculums whose capacity needs to grow and whose actual individual (student) demand equals optimal demand; somewhat lesser values are assigned to conditions in which curriculum capacity should grow, but prospective students will need to be counseled either into or away from the curriculum (since individual satisfaction could be reduced); lowest values are given to conditions in which curriculum capacity is greater than it should be and actual student demand is not consistent with optimal demand. Of course, the assignment of specific index numbers to each cell is subjective and should reflect the views of decision makers such as legislators and other representatives of the public.

As a summary of this particular way of combining societal and individual demand, an example of how indices of relative quantitative demand may be assigned to proposed preparatory or retraining curriculums is provided in Table 4. As shown in the table, projections reveal that 25 percent

Table 4
DETERMINING RELATIVE QUANTITATIVE DEMAND
(Preparatory or Retraining Curriculums)

Occupational Curriculum	Demand			Present Curriculum Capacity (N)	Index of Relative Quantitative Need
	Societal (percent)	Optimal (N)	Individual (N)		
A	25	125	125	100	9
B	5	25	35	35	2
C	20	100	50	50	7
—	—	—	—	—	—
—	—	—	—	—	—
—	—	—	—	—	—
Z	5	25	25	25	5
Totals	100	500	500	420	

of the total societal demand for unfilled positions (estimated for a given time and location) will be required for the occupation(s) in curriculum A, 5 percent will be needed from occupational curriculum B, etc. A household survey indicates that a total of 500 individuals desire publicly supported preparatory vocational education; 125 of the 500 persons desire training in curriculum A, 35 desire training in curriculum B, etc. To compute optimal demand for curriculum A, multiply 25 percent by 500; for curriculum B multiply 5 percent by 500; for curriculum C multiply 20 percent by 500, etc. Present curriculum capacity (number of training stations) may be obtained from school authorities.

For curriculum A the actual individual demand is the same as optimal demand and present curriculum capacity is less than optimal demand. Referring to the indices in Table 3, this condition calls for an index of relative quantitative demand of 9 to be assigned to curriculum A. For curriculum B, actual individual demand (35) is greater than optimal demand (25), and present curriculum capacity (35) is also greater than optimal demand, so that calls for assigning an index of 2 to curriculum B.

The second procedure, the unmet demand approach, for combining societal and individual demand data to justify one or more curriculums for implementation is adapted from Pucel (1973). This procedure is depicted in Figure 1.

Figure 1
INFORMATION REQUIREMENTS AND FLOW ASSOCIATED WITH JUSTIFYING A PROGRAM

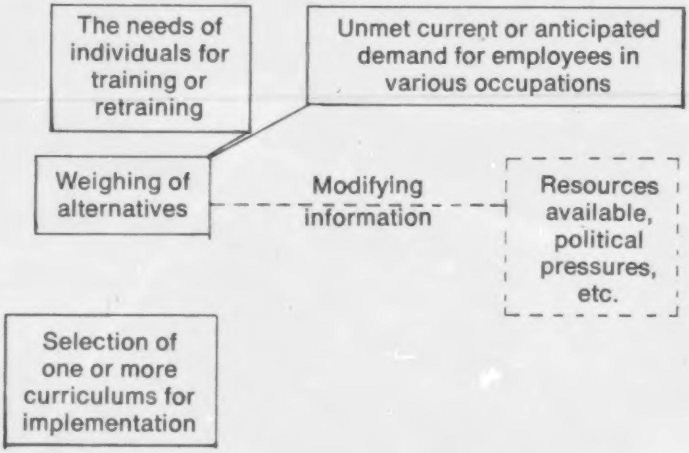

The needs of individuals for training or retraining
Unmet current or anticipated demand for employees in various occupations
Weighing of alternatives
Modifying information
Resources available, political pressures, etc.
Selection of one or more curriculums for implementation

Figure 1 indicates that three types of information are necessary to determine quantitative demand as a basis for the continuation of a currently operating curriculum or to justify the creation of a new curriculum. The three types of information are (a) the needs of individuals for training or retraining, (b) the *unmet* current or anticipated demand for employees in various occupations, and (c) modifying factors, such as the resources available to operate vocational programs and political activity in the community. These three basic pieces of information, when considered together, allow decision makers to weigh alternatives and to make judgments concerning relative demand for curriculums.

The needs of individuals can be determined by using one of the methods described previously in this chapter.

The unmet demand for workers in various occupations can be determined by examining the difference between the supply of people being trained for occupations and the number of unfilled positions (demand) expected in them. One technique for determining unmet demand was presented by McNamara (1971). The technique was developed to provide program planners not only with information about occupational demand in a given occupational area, but also with information about residual or unmet demand. Unmet demand is calculated after the total demand is reduced by the total anticipated supply. The unmet demand for various occupations is then used in making program planning decisions. Table 5 presents sample data which provide an example of this approach.

This table shows examples of the way information can be presented to program planners. The number of people employed in each of the various occupations as of the 1970 census is reported along with the projected 1985 employment in those occupations. The annual withdrawal rate from the occupations due to retirement and other reasons (including, if possible, the net effect of occupational and geographical mobility) is calculated. The annual withdrawal rate and anticipated annual growth in the occupation are then added together to arrive at anticipated annual demand for the appropriate geographical area. The annual supply of trained persons for these occupations is obtained by summarizing information gathered through a survey of all of the sources of training for these occupations in the geographic area. The annual supply is then subtracted from the annual demand to obtain an estimate of the residual or unmet demand. The unmet demand is then used by decision makers as one factor in determining relative quantitative demand for curriculums in those occupations.

After the needs of individuals for training and the unmet current or anticipated demand for employees in various occupations have been ascertained for the geographic area to be served by a vocational program, this information must be combined with modifying information to determine the relative demand for each of the curriculums under consideration. Some of the modifying considerations are the resources available and the political pressures in the community.

Table 5
SAMPLE MANPOWER AND TRAINING DATA
(Summary of Clerical Workers 1970)

Occupational Classification	Census (1970) (1)	Projected Employment (1985) (2)	With-drawal (3)	Annual Growth (4)	Annual Demand (5)	Annual Supply (6)	Unmet Demand (7)
CLERICAL	141,266	204,900	7,251	4,242	11,493	6,398	5,095
Accounting, Clerks and Bookkeepers	10,370	13,026	431	237	668	1,073	405*
Secretaries	22,449	37,176	1,560	982	2,452	1,793	749
Other Clerical Workers	108,447	153,798	5,260	3,023	8,283	3,532	4,346

* Excess Supply

The unmet demand approach to determining relative quantitative demand is based on an assumption that should be explicated. By accepting the supply of trained workers from all sources as a given, planners assume that vocational education should play a residual role in occupational training. For the same reason, planning for vocational education then tends to be incremental; it does not reexamine the total mix of training programs.

Curriculum effectiveness. Where curriculums are currently operating, their relative effectiveness should be another factor considered when estimating their continued social and individual utility. Past performance should be taken into account as plans are formulated for the future. While the other factors considered in this chapter attempt to assess potential curriculum appropriateness, assessments of prior effectiveness provide one predictor of potential quality—and if resources are limited, it may be necessary to reduce or to cut ineffective programs.

So much has already been written on means for assessing curriculum effectiveness that it hardly seems appropriate to treat the subject here. Many variations of follow-up systems have been developed and reported in the literature. Suffice it to say that these and other methods of obtaining reliable and sensitive indices that accurately reflect widely accepted vocational goals still need further development. To be consistent with the goals in Table 1, one of those indices should reflect some compilation of (a) measures of satisfaction of the former student with his/her work, and (b) measures of satisfaction of the employer with former student performance (both quantity and quality). While that kind of index would summarize curriculum effectiveness with students placed, other indices of effectiveness might also be utilized to reflect placement effort (e.g., placement rate/expected placement rate) and recruitment effort (e.g., enrollment/expected enrollment) as indications of the extent to which the curriculum has realized its quantitative potential for service to individuals and to society.

Other factors. There is no doubt that factors other than those prescribed above will be relevant to some decisions about curriculum priorities. For example, limitations of existing staff (both in numbers and capabilities) and union contracts may frequently restrict the feasibility of changing the curriculum in specific schools. Other considerations, such as the personal preferences of influential people, may also affect decisions. In those instances, priorities must be adjusted to conform to the realities of the situation. But if it becomes evident that factors which do not appear on the prescribed list are utilized frequently to adjust priorities, then it is obvious that those factors should be made a part of the regular priority-setting process.

Combining Social and Individual Utility Factors

It has been emphasized throughout this chapter that the process of setting curriculum priorities should reflect, as accurately as possible, the goals and values for vocational education held by those to whom the system is accountable. This is nowhere more true than in the process of "weighting" the separate social and individual utility indices of program purpose, occupational value, quantitative demand, and curriculum effectiveness. The "weights" assigned to each index should be such that their combination results in curriculum priorities that are as consistent as possible with the judgments of legislators, advisory council members, representatives to the committee for preparing the state plan, and members of the state board for vocational education.

Copa, Geigle, and Imade (1976) pilot tested a procedure which can be used to derive "weights" for each factor involved. Decision makers were presented with carefully constructed, fictitious data and led through exercises in which they were forced to make explicit the values, factors, and weightings used to make their priority decisions.

Undoubtedly exercises like this should be encouraged, since they have multiple payoffs. They focus the attention of decision makers on key planning issues in simulated situations which foster rationality. The results may then be applied to actual data in a more routine, objective fashion by the planning staff, with greater probability that their decisions will accurately reflect the values of the groups to whom they are accountable.

Summary

The major purpose of this chapter has been to propose a strategy for program planning through assigning priorities to vocational curriculums that will move the planning process toward more rational decision making. The essential subjectivity and political character of the planning process has been recognized, but it has been argued that by making the social values and goals that guide the process explicit, and by carefully delineating and examining the factors that should enter into decisions, the process will become more rational and the decisions will be more consistent with social values and goals.

Toward this end, the proposed strategy (a) calls for assisting representatives of the public to reach consensus (or compromise) about the nature and relative weights of goals and values for vocational education, (b) suggests certain types of data that should be considered in reaching program planning decisions, (c) indicates how the particular set of goals and values chosen for vocational education determines the manner in which data should be utilized in decision making, and (d) provides some illustrative implementation techniques.

63

References Cited

Copa, G. H., Geigle, E. K., and Imade, U. O. *Factors, priorities, and information needs in planning vocational education: Views of selected educational planners in Minnesota.* Minneapolis: Minnesota Research Coordinating Unit for Vocational Education, University of Minnesota, 1976.

Copa, G. H., and Maurice, C. *People's need for additional job training: Development and evaluation of a procedure for assessment.* Minneapolis: Minnesota Research Coordinating Unit for Vocational Education, University of Minnesota, 1976.

Friedman, J. *Retracking America: A theory of transactive planning.* Garden City, N.Y.: Anchor Press/Doubleday, 1973.

Lecht, L. A. *Manpower needs for national goals in the 1970's.* New York: Frederick A. Praeger, 1969.

McNamara, J. F. A state system of labor market information. *The American Vocational Journal,* February 1971.

Moss, J. E., Jr., Smith, B. B., and Copa, G. H. *Some major concepts in a rationale for education for work (career education).* Unpublished manuscript, Minnesota Research Coordinating Unit for Vocational Education, University of Minnesota, 1972.

Pucel, D. J. *The Minnesota vocational follow-up system: Rationale and methods.* Minneapolis: Vocational Follow-up System, University of Minnesota, 1973.

CHAPTER 3

COMPREHENSIVE PLANNING AT THE NATIONAL, STATE AND LOCAL LEVELS

Joseph F. Malinski, Ann M. Martin and Eugene Lehrmann

Uncountable numbers of individuals, educational institutions, government agencies, organizations, and businesses at all levels of operation are currently involved in planning activities that impact on vocational education. The Education Amendments of 1976 say:

> The term "vocational education" means organized educational programs which are directly related to the preparation of individuals for paid or unpaid employment, or for additional preparation for a career requiring other than a baccalaureate or advanced degree (p. 2211).

Rationale for Comprehensive Planning

Magnitude and Diversity of Vocational Programs

Public, private, and nonprofit agencies are providing employment-related instructional services directly to individuals, research and planning activities to meet the employment needs of many citizens, and resources to finance vocational education activities. Programs and activities related to vocational education are operated by the federal, state, and local governments, and by business, labor organizations, local community groups, and others.

Vocational education programs have been developed out of at least seven major pieces of federal legislation. They are administered or operated by 10 federal departments, by state and local units of government, by private and nonprofit service organizations, and by trade unions and associations. Over $600 million of federal funds are currently being spent each year on vocational education. Billions more come from state, city, and county governments, and from private and nonprofit organizations, businesses, and unions.

Millions of people are receiving employment counseling and testing services, vocational education, and manpower training, both in school and on the job. Many more are participating in employee development and training programs in both the public sector and in private business.

Government agencies and private businesses are recruiting, hiring, and promoting their employees, while concurrently studying current and projected market conditions and populations in order to plan for their future occupational and manpower needs. Public and private educational, vocational, and technical training schools are also conducting planning activities to meet the needs of their students while they are in training and when they enter the world of work.

Many programs provide services directly to individuals needing assistance in planning and preparing for employment. Some programs provide income maintenance for those unable to find a job at a living wage. Other programs address the problems of personal motivation.

Programs have been developed to solve personnel problems of particular groups of people, including management and labor. Other programs perform general planning activities by developing data and research, identifying problems, establishing goals and objectives, monitoring and evaluating the delivery of services, and recommending resource allocations for programs.

The magnitude and diversity of vocational education programs and activities has led to a general lack of coordination and fragmentation that makes comprehensive planning difficult. In addition, the lack of a set of compatible program information systems causes difficulties for vocational education planners.

Information on unmet needs and gaps in services is as hard to come by for vocational education planning purposes as it is in most other social service areas. A complete inventory of planning resources is not available at this time. There is no structure allocating resources among the full range of vocational education programs to meet the priority needs of citizens or to respond to shifting priorities at each level of need.

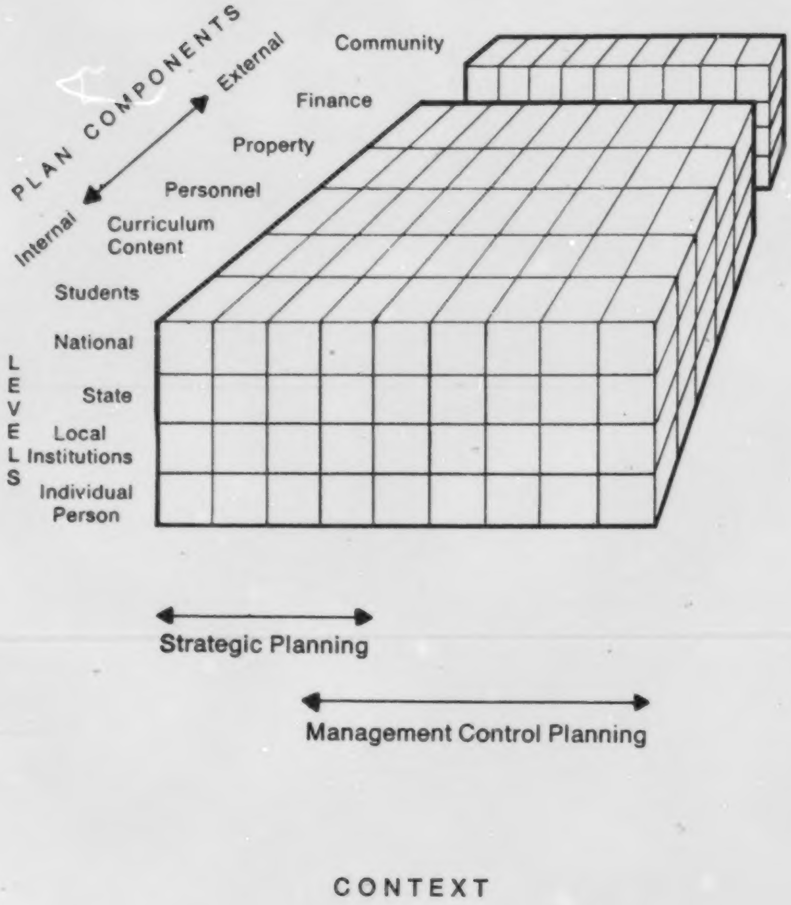
Elements of Comprehensive Planning

Comprehensive vocational education planning should incorporate all the elements shown in Figure 2.

An analysis of the projected interactions of the components shown in Figure 2 will produce a wide range of alternatives from which to select an appropriate plan. It could also be used to monitor the likely response of decision makers at another institutional or agency level. Coordinated comprehensive planning should occur at all levels of operation and management.

Therefore, the underlying reason for comprehensive planning in vocational education is to provide a systematic procedure for obtaining, using, accounting for, and reporting the resources needed and the results of vocational education.

Figure 2
COMPONENTS OF COMPREHENSIVE PLANNING FOR VOCATIONAL EDUCATION


PLAN COMPONENTS
External
Internal
Community
Finance
Property
Personnel
Curriculum Content
Students
LEVELS
National
State
Local Institutions
Individual Person
Strategic Planning
Management Control Planning
CONTEXT

Long-Range and Short-Range Planning

The word *planning* has such a wide range of meanings that unless the context in which it is used is understood, it may be a confused rather than an orderly process. To clarify the meaning of long-range and short-range planning as used in this chapter, the following two components of planning will be described in detail: (a) strategic planning and (b) management control planning.

Strategic planning. The strategic level of planning is made up of both strategic and tactical planning. Tactical planning is concerned with the allocation of resources among objectives. Strategic planning is concerned with the acquisition of resources, whether new or from other sources.

Strategic planning is long-range planning which takes a long look ahead to determine as far as possible what ought to exist five or ten years in the future. It is nonrecurring, has long time horizons, and is done at the authority level of management. A way of visualizing the nature and scope of strategic planning is to review the past, noting the indicators of changes to come which were in evidence five or ten years ago. If indicators had been detected and used, many of our present problems could have been alleviated. The following are examples of areas where strategic planning was needed: the falling birth rate of the 1960s and the consumption of fossil fuels in the United States at rates higher than the discovery of new reserves. The same kinds of indicators are present today. Strategic planners are at work to envision and establish programs to serve the needs that will exist five to ten years in the future. Is the changing pattern of cost sharing among the individual student, industry, and the public in adult updating and upgrading programs one such indicator? Strategic planning utilizes long-range planning which encompasses current directions and trends over a period of time, but rather than focussing only on existing programs, strategic planning recognizes the need for new programs and the elimination of others.

Management control planning. Planning for operations, accounting, and administrative responsibilities make up management control planning. For operations, what is to be done must be defined precisely. For accounting, the projected activities or events need to be structured in such a manner that accurate information on management decisions can be obtained. Planning for administrative responsibilities is concerned with the utilization of the available resources to achieve objectives.

Management control planning, short-range planning, or work planning is of the program or project type. It is the process of determining how to accomplish a selected objective efficiently and effectively. It is concerned with the immediate task of planning, organizing, scheduling, and controlling resources. This planning is most often done in connection with the preparation of the annual budget. However, it can be effectively used with other management functions. The work plan will show: (a) the work to be done or the objective to be accomplished, (b) a description of the resources required, (c) a set of alternative methods, and (d) provision for evaluating performance after the plan has been placed in operation.

Table 6 is a management control planning outline for serving students with special learning needs. Only the major goals have been stated. Such an outline should be helpful in planning and monitoring other programs in vocational education. A point to be emphasized is that neither strategic planning nor management control planning can be fully effective if either is ineffective.

In regard to strategic planning, Lichtenberger (1968) says:

> No matter how orderly and logical management control planning may be, if it is not exercised within the design of strategic planning, it may not even be in the game being played. Without a design established through strategic planning, the question must be: "Is there a game at all?" (pp. 2-3).

Clawson (1968) offers this observation of attempts to analyze the future for planning purposes:

> The poet has talked of seeing through a glass darkly—an expression which many writers have applied to our view of the future. My experience has been that, when we look into a glass, even a window, sometimes what we see is a reflection of objects behind us. What we see through the glass sometimes gets confusingly intermingled. Our effort to interpret the future may reflect as much of our prejudices about the past as it does any penetrating analysis of the future (p. 35).

Problems and Issues in Vocational Education Planning

In this section, some of the major problems with the current vocational education planning structure are identified. Problems are identified in five major areas, including: (a) coordination and comprehensiveness, (b) goal and policy formation, monitoring, and evaluation, (c) involvement in vocational education planning, (d) research, data, and information, and (e) the changing nature of the system and needs to be met. Flowing from each of these problem areas are a series of issues which must be resolved in establishing alternative structures for dealing with planning. The major issues are listed under the relevant problem area.

1. Coordination and Comprehensiveness
    a. Can a single coordinated planning structure, at whatever level, meet the vocational education planning needs of all the constituents and clients to be served? If so, how? If not, why not?
    b. What mechanisms can be developed at the local, regional, state, or national planning level to influence and deal with the national and state administered programs?
    c. How can planning for private, semi-private, and special purpose

Table 6

MANAGEMENT CONTROL OUTLINE FOR SERVING STUDENTS WITH SPECIAL LEARNING NEEDS

A. Student Personnel Services (SPS)	B. Special Needs Services (SNS)	C. Instructional Program Services (IPS)
1. Identify, define, classify, and report all student characteristics and occupational goals.	1. Identify, define, classify, and report personnel skills, instructional methods, and other resources available or required to serve the special learning needs student.	1. Identify, define, classify, and report occupational characteristics, personnel skills, instructional methods, and other resources available or required to instruct all students, including special learning needs students.
2. Provide personnel counseling, vocational counseling, directive counseling, financial aid, and arrange for: a. other direct life support services b. student accounting of membership	2. Provide: a. specialized instructional skills b. individualized instructional prescriptions tailored to the special learning needs student	2. Provide: a. occupational instructional skills b. individualized instructional prescriptions tailored to meet the instructional goals of all students, including special learning needs students

c. employers to inform them of the availability of potential employees, and to request information on the performance of former students

d. graduates to collect follow-up data, analyze it, and disseminate results to SLS, IPS, campus, and district administration

c. to inform the SPS staff of schedule of completions and employability skills of special learning needs students

d. to inform the instructional staff of individualized prescriptions required to meet the instructional goals of special learning needs students

e. to inform the instructional staff of additional resources to be made available to meet the instructional needs of special learning needs students

c. to recommend to the SPS staff that additional personal or vocational counseling be given to special learning needs students

d. to inform the SPS staff of additional life support needs of special learning needs students

e. to inform the SPS staff of the occupational skills needs of special learning needs students

f. to inform the SPS staff of recommended modifications of individualized instruction prescriptions of special learning needs students

g. to inform the SNS staff of additional resources required to meet the needs of special learning needs students

c. attendance and progress of all students, including special learning needs of students	c. additional instructional resources required by special learning needs students which are not generally available	c. the instructional resources required to serve all students, including special learning needs students
d. execution of the affirmative action policy	d. a specific progress monitoring system for special learning needs students	
e. a job development and placement system		
f. a student follow-up system		
3. Communicate with:	3. Communicate with Student Personnel Services (SPS):	3. Communicate with Student Personnel Services (SPS):
a. Special Needs Services (SNS) staff to inform them of the planned enrollment of special learning needs students under the affirmative action policy	a. to inform the SPS staff as to planned activity required to meet the instructional needs of special learning needs students	a. to inform the SPS staff as to planned activity to meet the instructional needs of special learning needs students
b. human service agencies to solicit specific student life support services	b. to inform the SPS staff of additional life support needs of special learning needs students	b. to inform the SPS staff how to modify goals to serve special learning needs students

4. Be accountable for:	4. Be accountable for:	4. Be accountable for:
a. correctly identifying student characteristics and goals	a. correctly identifying skills, methods, and other resources necessary to successfully serve the special learning needs student	a. correctly identifying occupational characteristics
b. providing appropriate personal and vocational counseling	b. providing appropriate individualized instructional prescriptions tailored to the requirements of each special learning needs student	b. designing and implementing an individualized instructional program to adequately serve all students, including special learning needs students
c. providing or arranging for necessary life support services	c. recommending a resource level necessary to meet the instructional needs of special learning needs students	c. requesting the additional resources required to successfully serve the special learning needs student
d. accurately analyzing and reporting student follow-up information	d. accurately analyzing and utilizing information derived from the progress monitoring and follow-up system for special learning needs students	d. accurately analyzing and utilizing information derived from the students' progress monitoring follow-up system

programs and activities be further or increasingly related to the public planning process?

d. How can resources for vocational education planning functions and activities be allocated in a comprehensive fashion to meet priority needs and equity considerations of various geographic areas?

e. How can services and facilities be pooled or centralized to yield more comprehensive data on needs and to decrease administrative costs?

f. How can program overlaps, duplications, and gaps in services be detected and managed? What is the appropriate planning mechanism for comprehensive coordination of services and programs?

g. What inter-agency mechanisms are needed to coordinate vocational education planning with other critically related planning?

2. Goal and Policy Planning, Monitoring, and Evaluation

   a. Should goal and policy development be coordinated at the local, regional, state, or national level? Is the existing mechanism at the state level sufficient for coordination? If not, what is an appropriate mechanism? Can separate local policies, goals, and priorities be reconciled into a comprehensive set of priorities? How?

   b. What is an appropriate mechanism for identifying the unmet needs? For identifying future needs? For recommending new policies and programs to meet these needs?

   c. How should capabilities for monitoring and evaluating vocational education programs and services be improved? Can performance indicators for each of the major functions of vocational education programs be identified? What mechanism can put the improved capability to use so that monitoring and evaluation are made comprehensive and continuous? How can monitoring and evaluation be related to resource allocation so that ineffective programs are identified and dropped?

3. Involvement in Vocational Education Planning

   a. How can student and employer representation be increased in all vocational education planning activities? How can advocacy planning be given a more effective role in the planning process?

   b. How can a planning structure be developed to prepare parents, students, and teachers—and provide them the necessary information for a greatly expanded role in vocational education planning and the decision-making process?

4. Research, Data, and Information

   a. Is one centralized information system or set of compatible systems most desirable? How can such a system be developed?

   b. How can existing data, information, and analyses be made more usable in improving both short-range and long-range planning? Should there be more geographical breakdowns of statistical data which would be relevant to vocational education? Should there be a more detailed breakdown of vocational education needs of special groups?

   c. What is an appropriate means to identify problem areas needing further study? Is there one or are there several agencies better equipped to perform these studies?
   d. How can existing data, information, and special studies be gathered in a useful form and disseminated to all persons and agencies that may be able to use them? What mechanism can be provided to ensure that they are utilized by all of the people who are developing policies and making funding decisions for vocational education?

5. The Changing Nature of the System and the Needs to Be Met
   a. How can changing needs for vocational education services be addressed? How can the mix of public and private service delivery systems be addressed? How can the shifts in employment concentration and skill content be addressed?
   b. How can a decentralized and representative planning process exist within a structure for resource allocation in which decisions are concentrated with local, state, and/or federal officials? What mechanism is appropriate to monitor the process?

The problems and issues listed above are only intended to be illustrative. The issues are stated in question form and should be considered as appropriate to all types or levels of planning.

Need for Planning at the National Level

From a national perspective, planning has been a requisite component of vocational education since passage of the Smith-Hughes Act in 1917. In those early years of federal support for vocational education, each state was required to submit a plan to the Federal Board for Vocational Education outlining the methods which would be used to conduct its vocational education programs. From that beginning, Congress has continued to place increasing emphasis on the importance of planning to the success of vocational education across the nation.

The Federal Role in Vocational Education

The Vocational Education Act of 1963 vastly expanded the federal role in vocational education and imposed new planning requirements upon the states in order to be eligible for federal funds for vocational education. This act enabled the states to broaden the scope of occupational areas for which vocational preparation could be supported with federal funds. Federal expenditures for vocational education jumped from approximately

$55 million in FY 1964 to $157 million in FY 1965 and $234 million in FY 1966.

While the 1963 act presented the states with vast opportunities to serve more people and to prepare them for many more occupational areas, it also presented them with planning responsibilities for which they had little preparation. Labor market information necessary for sound planning was not then available to state planners, although the act required state vocational education agencies to enter into cooperative arrangements with their respective state employment service offices. No federal funds were provided for the preparation of manpower data needed by vocational education, and as might be expected, little progress was made in securing special data tabulations for vocational education planning purposes.

Report of the National Advisory Council

The 1963 act included provisions for the appointment of the National Advisory Council on Vocational Education to review the results of the act in 1966 and each five years thereafter. In its first report, the National Advisory Council found:

> The state plan and state program of projected activities serve as the contractual tie between the individual states and the Federal Government. The process is subject to a number of major criticisms: (1) the lack of participation by the local school systems, (2) the narrow and restrictive interpretation of certain functions and aspects of the Vocational Education Act, and (3) the restrictive nature of many plans for teacher certification which hindered the staffing of new programs. . . . The Vocational Education Act of 1963 gave the U.S. Commissioner of Education broad powers in approving the state plans and, thus, in asserting dynamic leadership in the direction of vocational education and the implementation of the Vocational Education Act of 1963. . . . The extent to which the mandate of the Vocational Education Act of 1963 will become a full reality will greatly depend on the affirmative actions the Commissioner will take in the future (1968, pp. 42-43).

The National Advisory Council (1968) noted that "the presently misnamed 'State Plan' should be recognized as merely a legal contract between the federal and state agencies," and recommended that "the present 'projected program activities' should become a 5-year projected plan subject to annual updating" (p. 51).

Importance of State Planning

The Vocational Education Amendments of 1968 placed further emphasis upon the importance of state planning. In addition to the annual program plans, the 1968 amendments required the states to develop long-range program plans for vocational education. State advisory councils on vocational education were established to assist the state boards in developing plans which were responsive to the labor market and human resource development needs of their respective states. To improve the states' utilization of labor market information in the development of their plans, the amendments authorized the commissioner of education to "reserve an amount, not to exceed $5,000,000 in any fiscal year, for transfer to the Secretary of Labor to finance . . . national, regional, state, and local studies and projections of manpower needs for the use and guidance of federal, state, and local officials . . ." (P. L. 90-576, section 103). The state plans were to reflect, in part, "the results of periodic evaluations of state and local vocational education programs, services, and activities in the light of information regarding current and projected manpower needs and job opportunities, particularly new and emerging needs and opportunities, on the local, state, and national levels" (P. L. 90-576, section 123).

Status of Manpower Information for Vocational Education

The transfer of funds to the Department of Education never took place, and as a result, the Department of Labor did not produce special reports and manpower projections tailored to the needs of vocational educators. In June 1971, a letter from the assistant secretary of manpower informed the commissioner of education that:

> On the expectation that such funds would be made available, instructions were sent to the state employment security agencies in order to carry out a program of this magnitude. Unfortunately, the entire $2 million requested for FY 1970 was subsequently denied by Congress and no request was made by HEW for FY 1971 funds under this provision of the law. In the absence of any resources necessary to provide the occupational requirements information, we had no alternative but to make the development and reporting of this information by the state agencies voluntary rather than required (Drewes & Katz, 1975, p. 1).

State Plan Viewed as a Compliance Document

The state plans that were produced in response to the 1968 amendments continued to be viewed as compliance documents rather than operational plans. A study conducted by the U. S. General Accounting Office found that "plans at State and local levels are prepared primarily to comply with Federal requirements, and are not used to provide direction to programs or to measure impact" (Ahart, 1975, p. 15). The National and State Advisory Councils on Vocational Education supported this finding:

> . . . in some states the planning process has tended to bog down in formality. Concentration on meeting the literal requirements of the law results in failure to fulfill its spirit. The 'compliance documents' thus produced are submitted to the U. S. Office of Education, approved, and then shelved. They do not become effective tools for guiding performance (p. 758).

Both GAO and the National Advisory Council attributed part of this problem to the existing USOE requirements for a standard state plan format.

Improving State Planning for Vocational Education

The Education Amendments of 1976 made it clear that one of the primary purposes of federal support for vocational education is ". . . to assist states in improving planning in the use of all resources available to them for vocational education and manpower training . . ." (P. L. 94-482, section 101). To ensure that the state plan is responsive to the needs of the state, the 1976 amendments require a much wider representation of agencies, organizations, and the public during the preparation of the state plan. Ten specific groups must be represented and involved in the development of the five-year state plan. Furthermore, a series of public hearings must be held to provide the opportunity for all segments of the state's population to express their views on the goals which ought to be included in the state plan, the programs to be offered, the allocation of responsibilities for programs, and the allocation of resources to meet the goals. More attention is to be given to employment opportunities; mechanisms must be established for coordinating vocational education programs with manpower training programs; information must be provided on an annual basis showing the extent to which the goals of the five-year plan have been achieved.

The five-year plan is to be updated annually to reflect changes in program enrollments, employment opportunities, the needs of special populations, and the distribution of federal, state, and local funds for vocational education. To ensure that the plans are not regarded as compliance documents, each state must prepare and submit to the commissioner an annual accountability report showing how funds have been used, the extent to which goals and objectives have been attained, a summary of the evaluations of programs conducted by the state agency, and a description of how the evaluation information was used to improve the state's vocational education programs.

Obtaining Better Data and Information for Planning

To assist the states in obtaining better information on employment opportunities for vocational program completers, the 1976 amendments call for the establishment of national and state occupational information coordinating committees. These committees are to develop and implement national and state occupational information systems which can be used to improve the planning of vocational education and manpower programs. In contrast to the provisions of the 1968 amendments pertaining to the transfer of funds to the Department of Labor, the 1976 amendments mandate that no less than $3 million nor more than $5 million per year of vocational education funds available to the commission will be transferred to the National Occupational Information Coordinating Committee to improve the occupational data available to vocational education and manpower planners. During the first year (FY 1978), $5 million were transferred to the committee, and state and national occupational information systems are currently being developed.

Occupational information is only one category of data that is essential to effective planning; evaluative data are also needed to serve as a basis for developing and modifying program plans. The 1976 amendments require each state to evaluate, during the five-year period of its state plan, the effectiveness of every vocational education program within the state being assisted by federal funds or matching state and local funds (P. L. 94-482, section 112). To the extent possible, the evaluations are to be in quantitative rather than qualitative terms, so that the evaluation data may be aggregated within a state and across states. The amendments require that the results of these evaluations be incorporated into the planning process.

In order to monitor the impact of vocational education programs across the nation, section 161 of the amendments calls for the development of a national vocational education data reporting and accounting system. Prior to this legislation, much of the data available on vocational education could not be aggregated across states due to nonstandardized data definitions. As a result, neither the USOE nor Congress was able to ascertain the progress and problems of vocational education nationally, and comparisons among states were of questionable validity due to differences in both definitions and data collection procedures. The vocational education data system (VEDS) will be the means for standardization of reporting and accounting in vocational education, making possible a meaningful aggregation of data gathered locally and from the states. These data will be linked with other data on the production of trained persons (the amendments specifically cite CETA in this connection), and coordinated with the occupational information system developed by the National Occupational Information Coordinating Committee.

Monitoring Vocational Education Programs

VEDS, annual accountability reports, and the national occupational information system are essential to improved vocational education planning at the national level. While education is primarily a state and local responsibility, it is incumbent upon the federal government to assist the states in expanding access to vocational education programs, offering high-quality programs, responding to changes in the social context, and providing vocational education opportunities which are realistic in light of current or anticipated employment opportunities.

VEDS and the annual accountability reports will provide USOE with a new means for keeping its finger on the pulse of the states. For the first time, data based on uniform definitions will be available on vocational education students, programs, program completers and leavers, facilities, and expenditures. The national occupational information system will provide data on current and projected occupational demand, as well as the supply of workers coming from CETA programs, secondary vocational education programs, postsecondary vocational education, and other institutional and noninstitutional training programs. With these types of information, it will be possible to determine the extent to which vocational programs are in line with current and projected job opportunities. Progress in expanding access to vocational education programs of the disadvantaged, handicapped, minorities, and women can be monitored. Valid follow-up data will be used to evaluate the impact of vocational education in terms of employment in related occupations, wages, and employer assessments of the extent to which the former students were well-trained and prepared for employment.

Providing Assistance to the States

Monitoring the nationwide progress of vocational education is only a first step toward national planning. The information obtained on the progress of vocational education must be acted upon to develop national priorities, policies, and programs for assisting the states in maximizing the effectiveness of their programs. There are several mechanisms which are available for providing this assistance to the states.

First, applied research and development activities which focus on problems of national significance can be supported. This includes support for the research activities of the National Center for Research in Vocational Education, as well as funding for other research projects considered to be of national significance to vocational education. For example, to assist the states in improving their planning processes, the National Center for Research in Vocational Education is developing a user's manual for improving vocational education planning through more effective and efficient use of data. The Center is also performing studies on comprehensive planning for more responsive vocational education. Furthermore, during FY 1978, one of the national research priorities in vocational education was state planning for the delivery of vocational education to special populations; another was to establish mechanisms and criteria for coordinating vocational education programs with activities authorized by the Youth Employment and Demonstration Projects Act.

A second approach for providing assistance to the states is through the identification of program areas in which there is or will be a shortage of qualified teachers, and the subsequent award of fellowships to prepare individuals to teach in those program areas. The information available from the national occupational information system can be used to ensure that there will be an adequate demand for vocational education completers from those program areas.

Improving Nationwide Planning in Vocational Education

Improved nationwide planning should also result from two evaluation activities of the Office of Education. OE personnel are visiting 10 states a year to review the strengths and weaknesses of their vocational education planning procedures. These reviews (which are a part of the analysis of strengths and weaknesses called for in section 112 of the 1976 amendments) will enable OE to keep abreast of current difficulties in state planning, and to provide assistance to the states in overcoming some of the limitations in their planning procedures. Secondly, the commissioner will be reviewing each state's annual plan and accountability report. The results of these reviews, including suggestions for improvements, will be transmitted back to the state boards to assist them in operating the best possible programs of vocational education.

It is apparent that vocational education planning at the national level relies heavily upon providing leadership and assistance to the states in responding to national priorities. With the cooperation of the states, a coordinated and effective nationwide program of vocational education can be implemented, and VEDS can document progress in preparing people for meaningful employment. Continued congressional support for vocational education will depend upon the results which can be shown. Vocational education must be able to demonstrate progress in meeting the training needs of all students, including the handicapped, the disadvantaged, minorities, urban youth, women reentering the labor force, people in prisons and a variety of other groups that need quality programs of vocational preparation. Vocational education must be responsive to the needs of employers, and in this respect, the national and state occupational information systems offer program planners a means for adjusting program offerings in light of current and anticipated employment opportunities. Vocational education must also work cooperatively with other providers of occupational skills, so that their respective programs reflect a coordinated approach to preparing people for employment.

Fundamental Changes in Attitudes and Practices Required

Nationwide planning of vocational education will require some fundamental changes in attitudes and practices at the local, state, and national levels. First, it will require a renewed commitment to the importance of making programmatic decisions on the basis of valid data. In planning new vocational programs, more consideration will need to be given to the supply of educated and trained workers coming from both public and private training programs. To do so requires that empirical linkages be established between occupational demand categories and educational programs, including secondary vocational programs, postsecondary vocational programs, CETA-funded manpower training programs, proprietary school programs, and higher education programs. At the present time there is no uniformly accepted procedure for linking occupational categories and requirements to educational and training programs; as a result, estimates of supply are often incomplete. Assistance with this problem will be provided by the National Occupational Information Coordinating Committee.

Attitudes and practices regarding program evaluation will also need to be changed. First and foremost, more attention will need to be given to the quality and the marketability of the skills acquired in vocational programs. Clearly, the Congress considers the thrust of vocational education to be preparation for employment and work. As a result, evaluations of vocational education are to include information on the job performance of program completers and leavers. In discussing this issue, Jennings and Radcliffe (1977) note that:

> . . . at this particular point in time, Congress is saying that vocational education has to more accurately show that it's training people for needed job categories than it is doing now. The local evaluation requirements do not say that the program has to be terminated if it does not show success in placement. . . . All it says is that it's important to have that information and make it known. . . . It shouldn't be understood as the only test of whether anything succeeds, but it should be understood as an indication of whether funding from federal sources should continue for that particular program (p. 15).

Second, under the legislation, evaluation imperatives focus on two additional but related categories—process and access. The vocational education regulations regarding evaluation by the state board (section 104.402) specify that, in addition to securing placement and employer satisfaction data, each state is required to measure the effectiveness of programs in terms of such planning and operational processes as: (a) quality and availability of instructional offerings; (b) guidance, counseling, placement, and follow-up services; (c) capacity and condition of facilities and equipment; (d) employer participation in cooperative programs; (e) teacher/student ratios; and (f) teacher qualifications.

In addition, effectiveness is to be measured in terms of results of student achievement through: (a) standard occupational proficiency measures, (b) criterion referenced tests, and (c) other examinations of students' skills, knowledge, attitudes, and readiness for entering employment successfully.

Moreover, the impact of additional services is to be measured as applied to providing opportunities for special populations: (a) women, (b) members of minority groups, (c) handicapped persons, (d) disadvantaged persons, and (e) persons of limited English-speaking ability. As noted earlier, the evaluations conducted within the states are to be incorporated into the accountability reports and into VEDS.

Thus, programs which purport to prepare students for jobs should be able to demonstrate their success on the basis of the employment experiences of former students and provide the basis for beginning to take into account job satisfaction and success of vocational education students over a period of time. How satisfied does that individual remain with his or her choice of occupation? How has the original occupational choice and training enabled him or her to accommodate to changing economic and socioeconomic needs throughout the life cycle? Did the individual's vocational education cultivate enough resourcefulness, flexibility of thinking, and generalizable skills and knowledge to enable him or her to respond effectively to job changes (either those forced upon him or her or those that were sought out)?

Need for Evaluation Studies

These considerations point to the need for evaluation studies that conduct comprehensive assessments of vocational education programs and provide for long-term evaluation. State policies should be developed on the criteria for expanding and terminating vocational programs.

Assistance in the design of student follow-up studies so that they will be compatible across the states will be provided by the National Center for Education Statistics. The National Institute of Education (NIE) is to conduct an evaluation of vocational education over a four-year period, including a separate evaluation study of consumer and home economics programs.

As part of this undertaking, NIE will systematically study the methods and criteria states are using in their evaluations and how this information is utilized in planning and decision making. Alternative models for evaluating vocational education programs are being developed by the Office of Planning, Budget and Evaluation, USOE, in coordination with the NIE evaluation study.

Information Systems Need Modification

State and local vocational education agencies will need to expend additional effort in assessing the progress of their vocational education programs. Information systems will have to be modified to accommodate the reporting definitions used by VEDS. Data analysis capabilities will need to be expanded in order to fully utilize the data that will be available, and decision-making strategies will need to be modified to incorporate the additional types of information. Information systems will have to be designed so that planners and evaluators have quick access to data which can assist them in performing their assigned responsibilities.

Cooperation and Coordination among Federal Agencies

National planning of vocational education will also require coordination and cooperation on the part of various federal agencies. The Bureau of Occupational and Adult Education (BOAE), the National Center for

Education Statistics (NCES), and the National Occupational Information Coordinating Committee (NOICC) must coordinate their efforts in the acquisition, analysis, and interpretation of data relating to vocational education. Linkages will need to be established between the occupational information system developed by NOICC and the vocational education system developed by NCES. The data contained in these two systems should be readily accessible, along with computer support, for the purposes of planning, evaluation, and priority development. Analyses performed upon these data will need to be integrated into the research prioritization process of the Coordinating Committee on Research in Vocational Education.

Summary

The 1976 amendments offer new challenges and opportunities for vocational education. The mandated development and implementation of the national vocational education data system will require considerable effort on the part of local, state, and federal agencies. State and local vocational education agencies will also have to devote more of their staff time to planning and evaluation activities. However, the implementation of VEDS and the expansion of program evaluations will create an enormous amount of information which can be used to further improve the impact of vocational education nationwide. Analyses performed on these data can be used to identify emerging trends in the processes and products of vocational education. Comparative analyses can be undertaken to determine the relative benefits of alternative strategies for delivering vocational education services to students, and information on the most successful practices can be disseminated to the states.

New goals and priorities for vocational education can be developed to address the educational and socioeconomic problems of the nation. Alternative methods for achieving those goals can be compared on the basis of prior achievements of the states, and national research projects can be designed to focus on those goals and priorities which require additional information on the probable effectiveness of alternative strategies.

Valid information on the inputs, processes, and products of vocational education will enable decision makers at all levels to monitor and improve the effectiveness of vocational education programs. Areas in greatest need of assistance can be identified, and remedial actions can be planned accordingly.

The VEDS information which vocational educators can use to monitor and improve program effectiveness can also be applied to a problem which vocational education has experienced for the past 60 years: It can demonstrate to Congress that continued support of vocational education is indeed justified.

Need for Planning at the State Level

The state is the focal point for the coordination of all planning in vocational education for both strategic and management control purposes. Local, state, and national perspectives and priorities must be considered; compliance versus program performance goals of the plan must also be built in. Under provisions of the Education Amendments of 1976, a sole state agency responsible for the management and control of vocational education (state board for vocational education) is to be designated according to state law to prepare a five-year state plan and an annual program plan for vocational education. The process of plan development has been specified but the format has not been developed.

Structuring the Planning Process

In formulating the five-year state plan and the annual program plan, the state board is to actively involve a state plan committee. The composition and function of this committee are discussed in Chapter 6. The state board representatives and the designated state plan committee must meet at least four times during the planning year in developing the five-year state plan. The procedure for developing the annual program plan is the same as for the five-year state plan except that there are only three required planning meetings.

Both the five-year state plan and the annual program plan are to include information concerning all vocational education programs in the state, whether supported publicly or privately. After identification of the gaps and overlaps of vocational education programming in the state, the resulting plan should chart the course toward a more efficient and effective allocation of available resources. On the surface this is a simple concept, a noble thought, but in implementation there are massive implications for individuals, institutions, and state agencies, each conceivably with its own agenda and constituency.

Planning to plan. It is recognized that Chapter 4 of this yearbook is concerned with information systems for planning. However, any discussion of the need for planning at the state level must include a brief reference to the need to identify, define, classify, record, and report uniform data about students, programs, program completers and leavers, staff, facilities, and expenditures. The key word is "uniform." When uniform terms and definitions are used, each local or state agency's contribution to the plan will report corresponding information in a consistent fashion. It is also important that each state's plan use as a minimum the information elements and uniform definitions of the national vocational education data reporting and accounting system.

Many variables must be considered in the selection of the total planning structure. The most significant variable is the inter-agency relationships, but other variables include the local planning structure, the regional planning structure and function, and the involvement of affected personnel. The relationships among federal, state, and local governmental units are fundamental to any planning structure. Two basic models for structuring vocational education planning are mentioned here. Many variations of the two may be made, and each variation would be feasible within the limitations of varying regulations and legislation affecting vocational education planning in the different states.

1. *Centralized authority model.* This model centers authority at the state level. All local plans are subject to state approval.

2. *Decentralized authority model.* This model centers authority at the most elemental level feasible, which in vocational education planning would be the educational plan of each individual student. All plans are subject to individual student or parent approval.

An important factor in the state planning organization is the structure designed for involving relevant groups and interests in the decision-making process. The following criteria might be used as a checklist to evaluate the alternative planning structures.

1. *General provisions for:* (a) planning for constituents in all geographic areas, (b) planning for handicapped and disadvantaged groups with special needs, (c) planning for all manpower services, functions, and activities, including training and educational functions, job development, counseling, placement, referral, data and information services, and advocacy functions, (d) a realistic gearing of vocational education programs and services to the current and projected labor market, and (e) a comprehensive review and recommendations for allocation of resources for vocational education programs operating with public funds in the state.

2. *Coordination and comprehensiveness to provide for:* (a) the coordination of all vocational education functions, activities, and programs operating within the state, including an awareness of publicly funded manpower programs regardless of the funding source, and an awareness of private vocational education programs to the extent information is available, and (b) the coordination of vocational education planning, including health, welfare, general education, criminal justice, transportation, and economic development.

3. *Goals and policy formation, monitoring, and evaluation to provide for:* (a) the identification of needs for both long-term and immediate planning, (b) the development of goals and policies for both long-term and immediate planning, and (c) the continuous and comprehensive monitoring and evaluation that is related to resource allocation and program performance.

4. *Participation in vocational education planning to provide for:* (a) the involvement of representatives from all affected political units in the state, (b) the effective involvement of and responsiveness to a broad

representation of citizen groups, clientele and beneficiaries, minorities, business and labor from central cities, suburban, and rural areas, and (c) adequate planning expertise at all levels, including orientation and training of all involved in the planning process.

5. *Research, data, and information to provide for:* (a) more usable data and information, including more uniform definitions and classifications; uniform breakdowns to appropriate levels; timely, accurate, and uniform projections; additional information on certain target populations, and (b) making vocational education data and information available to all persons and agencies able to use it.

6. *Changing nature of the system to:* provide a flexibility for adaptation to changes in the system, including decentralization of planning and decision making; federal and state legislation and funding patterns; administrative agencies; needs; and labor market shifts and external factors which may influence vocational education.

Observation of the trends in vocational education planning would indicate that the decentralized authority model is gaining in popularity and acceptance by many decision makers, particularly as it affects handicapped students and employees. If this be true, then the most urgent need in vocational education planning at the state level is to organize the human and material resources to install the structure for decentralized planning.

Need for Planning at the Local Level

Local District and Institution Planning

It is at the local institution level that differences in the strategic and management control planning of the various authorities are resolved. As a result the local institution may be the recipient of legal action or public pressure for actions taken or services not provided, for which the institution has little control or does not have sufficient resources to provide the expected services.

The planning focus at the local level has been changing over the past 15 years from that of expanding skill development programs for specific occupations to considerations of: (a) manpower needs and job opportunities, (b) the educational and economic needs of the people to be served, (c) the economic characteristics of the area to be served, (d) the determination and justification of higher than average costs of programs for certain populations, (e) the elimination of sex bias and sex role stereotyping, (f) the coordination of manpower, vocational rehabilitation, special education, and vocational education, (g) evaluation of the success program participants have in employment, (h) information and data handling systems with the capacity to respond to both strategic and management control planning, (i) energy education, and (j) student services, including financial aid, work study, guidance and counseling, placement, testing, and assessment. These considerations are additional parts of the planning necessary to maintain, improve, or justify the vocational education instructional programs of the local institution.

In Minnesota, a state facing declining secondary and postsecondary enrollments over the next several years, and facing the probable rising costs associated with these enrollment declines, the legislature enacted mandatory planning legislation in 1977 which requires or suggests that local school districts do the following: (a) each school district shall develop a plan for the efficient and effective delivery of educational programs and services; (b) in the development of its plan, each school district shall confer with interested faculty and residents within the district, hold such public meetings as may be necessary, and furnish to the public necessary information concerning its plan and recommendations; and (c) school districts may meet jointly to discuss plans which will cross school district boundaries.

Each school district plan in the state of Minnesota shall include: (a) a statement of the goals and priorities of the district relating both to educational programs and services and to organization and management for the delivery of such programs and services, (b) a description, analysis, and assessment of alternative methods of organization and management which shall include: a summary of opportunities for coordination and cooperation with other districts, a statement of the consideration given to such opportunities and the reason for their rejection, a summary of restrictions and impediments to coordination and cooperation, and an assessment of the relative costs and benefits thereof, and (c) a statement of the data and assumptions upon which the district's goals, priorities, and consideration of alternatives are based, with respect to at least the following factors:

> 1. Enrollments for the school district, including projections for fiscal years 1981, 1983, and 1988.
> 2. Educational programs, services, and staffing in the school district.
> 3. The financial status and ability of the school district to support educational programs, including projections of revenue and expenditure.
> 4. The use, capacity, location, and condition of school buildings in the district, and needed capital improvements in excess of $200,000 for the period through fiscal year 1983.
> 5. Transportation costs and routes in the district.
> 6. Nonpublic school enrollments and programs and their impact on the district (p. 1311).

In addition, regional planning task forces were created to provide for comprehensive and coherent planning for the delivery of educational services. The Twin Cities Metropolitan Area Planning Task Force (Region XI) has suggested a common format for the reporting of plans.

The final step necessary to complete the planning and management cycle at the local institution level is the development of a formalized procedure for organizing and reorganizing management information in ways that will improve strategic planning, management control planning, and program operating decisions.

Rosove (1969) indicated the urgency of the need for institutional planning as follows:

> In the language of the information sciences, (cybernetics, computer science, data processing, systems analysis, information storage and retrieval, etc.) education currently occurs in a non-real time mode but it may increasingly have both a need and a capability for operating in a real time. . . . Changes in society, in the economy, and in science and technology—imply a reduction in the amount of time for institutional adaptation. Education, from the point of view of its timeliness, can operate effectively in isolation from other institutions when change is relatively slow; it cannot be equally effective in isolation when change is relatively rapid, as is now the case. Hence, we are led inexorably to the idea that within the next twenty years learning environments ought to be designed more like real-time information processing systems (p. 14).

This is the challenge placed before the local vocational education institutional leadership. Malinski (1972) says:

> Recent actions by Congress and state legislatures, in enacting much legislation concerned with providing employment and job skills to people, has spotlighted the strengths and weaknesses of vocational and technical education planning. As people demand increased programming in vocational and technical education, these same demands also contain the charge to provide these programs efficiently and effectively (p. 13).

Need for planning at the program level. Comprehensive planning of vocational programs can be viewed from two perspectives: (a) the perspective of the instructional program content and instructional process, and (b) the perspective of the students' characteristics and goals.

The program content part of the plan would contain the knowledge, attitudes, and skills which a person uses or performs in the occupation. Competencies indicate what a person is able to do and are both observable and measurable. They are illustrative of the activities actually engaged in by persons in the specific occupations and should be verified by an occupational advisory committee. In an educational setting each competency is taught to the skill level needed to enter the occupation and the student is evaluated as to how well each competency is performed. Thus, the successful performance becomes a product of the educational process that can be examined in terms of competencies attained and expenditures.

As vocational education programs move toward the development of individual competency-based curriculum systems, they are also faced with meeting the requirements of accountability and evaluation as set forth under current legislation. As a consequence, there is a need to provide a computerized accounting model for vocational programs operating under an individualized competency-based curriculum system. This model would provide the vocational administrator or teacher with detailed data necessary for decision making both in terms of (a) securing and accounting for the expenditure of funds and (b) the implementation of programmatic efforts. A diagrammatic illustration of the model is shown in Figure 3. The model in Figure 3 illustrates an individual student's progress within a vocational education program. This program planning process makes provision for extending the time and the resources to be used in achieving acceptable performance of any competency.

When the characteristics and goals of an individual student are added, the variables of adjusting content and the method of instruction are added to the planning process.

The individual educational plan. If the instructional program is described as the foundation of vocational education, then the student's individual educational plan can be viewed as the ground floor. The elements of the individual long-range plan include the: (a) assessment of the individual's interests and abilities, (b) statement of a potential occupational goal, and (c) development of a tentative plan to reach the goal. The short-range individual educational plan would include: (a) the student's current status, (b) a statement of a short-term goal and the time of expected achievement, and (c) a description of the evaluation process.

The development of an individual educational plan is currently mandatory for handicapped students under 21 years of age. Open entry, open exit programs designed to allow students to schedule vocational education parallel with employment, or alternating school and work are other types of individual educational planning.

This short discussion of instructional program and individual student planning can only serve to introduce the reader to a massive, complex, and continually changing operational planning and accounting system. The author has spent the last seven years assisting in the design of planning, programming, budgeting, and evaluation systems to implement individualized instruction. The uniform procedure instructions presently fill volumes and are being added to regularly as increased precision is required for planning and accountability.

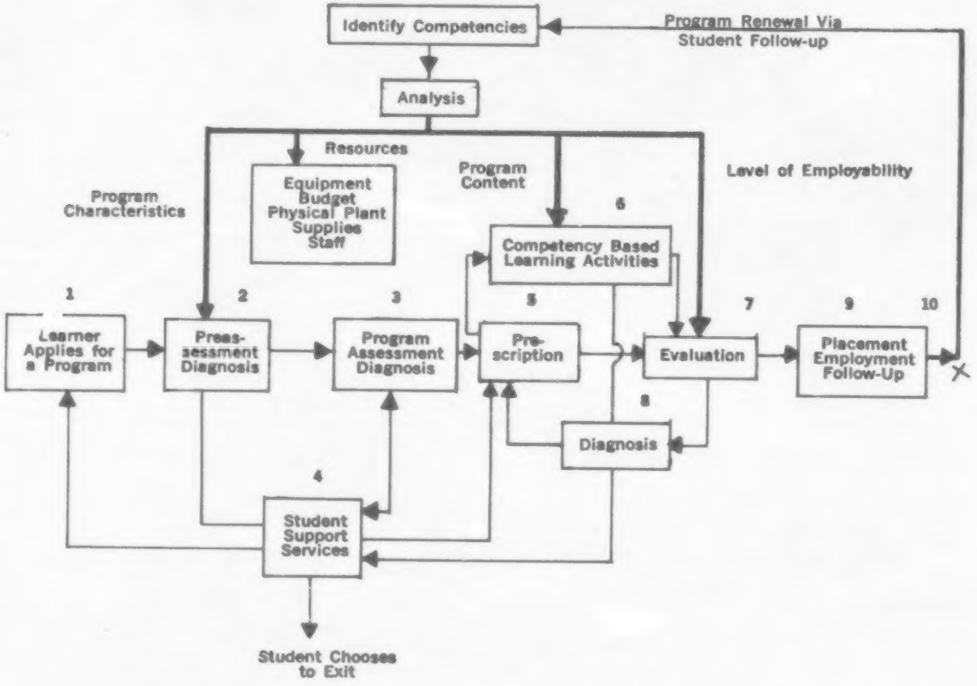
Planning as a Continuous Process

In the first section of this chapter, pertaining to the rationale for comprehensive planning, Figure 2 shows the interrelationships among the components of the plan, the levels of planning, and the context of either strategic or management control planning.

This would indicate the requirements for the preparation and execution of a plan which would:

1. Provide for broad public participation in planning for programs, services, and activities in vocational and technical education.

Figure 3
COMPETENCY-BASED DESIGN FOR IMPLEMENTING INDIVIDUALIZED INSTRUCTION
(DISTRICT 287, MINNESOTA)


Identify Competencies
Program Renewal Via Student Follow-up
Analysis
Resources
Equipment
Budget
Physical Plant
Supplies
Staff
Program Characteristics
Program Content
Level of Employability
6
Competency Based Learning Activities
1
2
3
5
7
9
10
Learner Applies for a Program
Preassessment Diagnosis
Program Assessment Diagnosis
Pre-scription
Evaluation
Placement Employment Follow-Up
8
Diagnosis
4
Student Support Services
Student Chooses to Exit

2. Organize vocational and technical education into a unified planning, operating, and reporting subsystem within education.

3. Provide for coordinated vocational education program opportunities for persons of all ages.

4. Provide for vocational education needs of disadvantaged persons in regular programs or provide special programs or services for them.

5. Provide for the vocational education needs of handicapped persons in regular programs or provide special programs or services for them.

6. Provide preservice and inservice education for vocational educators to update or retrain those professionals needed to achieve the broadened objectives.

7. Develop a systematic method for identifying, designing, testing, and installing more efficient and effective programs of occupational information and orientation, occupational exploration, skill development, updating, upgrading, and retraining to meet the needs, interests, and abilities of people in light of existing and developing opportunities for employment.

Therefore, as uniform planning and management formats are developed, vocational educators will have the opportunity to analyze the performance of various program processes and choose those which will most effectively achieve the objective identified. It is in this context that this chapter has been written. Several questions remain to be answered. What is the environment in which vocational education exists? What needs to be done? How much is being done now? How much do present programs cost? What must be done to improve and further develop programs of vocational and technical education?

To answer these questions, vocational educators at the national, state, and local levels will need a continuous and well-organized planning and reporting system which: (a) is coordinated and comprehensive; (b) provides for goal and policy formation; (c) allows for participation by numerous interest groups and individuals; (d) is based on accurate and timely data and information; (e) uses generally accepted accounting and analysis practices; and (f) is flexible enough to provide for the changing nature of the system.

References Cited

Advisory Council on Vocational Education. *Vocational education: The bridge between man and his work*. Highlights and recommendations from the general report of the Advisory Council on Vocational Education. Washington, D. C.: U. S. Office of Education, 1968.

Ahart, G. G. Statement prepared for the Subcommittee on Education of the Senate Committee on Labor and Public Welfare, in *Review of vocational education programs, 1975*. Hearings before the Subcommittee on Education of the Committee on Labor and Public Welfare, United States Senate, Ninety-Fourth Congress, 1975, pp. 8-28.

Clawson, M. The emerging American life style. *American Forests* (Part II). Washington, D. C.: The American Forestry Association, March 1968.

Drewes, D. W., and Katz, D. S. *Manpower data and vocational education: A national study of availability and use*. Raleigh, N. C.: Center for Occupational Education, North Carolina State University, 1975.

Jennings, J. F., and Radcliffe, C. W. *Commentary on legislation affecting vocational education research and development*. Columbus, Ohio: The Center for Vocational Education, Ohio State University, 1977.

Lichtenberger, A. R. *Strategic planning*. Unpublished paper, U. S. Office of Education, 1968.

Malinski, J. F. *Planning techniques for local programs of vocational education* (Information series 63, VT 014 964). Washington, D. C.: U. S. Government Printing Office, 1972.

Rosove, P. E. *Toward education in real time*. Santa Monica, Calif.: System Development Corporation, 1969.

Session laws of the state of Minnesota 10(4). Local school district planning. St. Paul, Minn.: 1977.

U. S. General Accounting Office. *What is the role of federal assistance for vocational education?* Comptroller General's Report to the Congress. Washington, D. C.: U. S. Government Printing Office, December 1974.

CHAPTER 4

INFORMATION SYSTEMS FOR PLANNING

William W. Stevenson, Ellen M. Bowers and J. B. Morton

The title of this chapter, "Information Systems for Planning," implies that there are other uses for which information systems may be developed. This is true in that information systems may be a part of an organization's or agency's evaluation process used for management decisions, or simply as a mechanism for reporting. However, a major purpose of establishing an information system is that it be incorporated into the total planning process. It is also true that while an information system should be a major part of planning, there may be many other inputs which influence and become a part of the planning process. The success of any administrator is to a great degree reflected in that administrator's ability to identify reliable sources of information and to be able to select and use that information which has the greatest reliability and relevance to a particular question or problem. Information systems cannot and should not attempt to replace the good judgment and instinctual reaction of an experienced and competent administrator.

The problem, however, usually results from too little rather than too much reliance on factual objectives, and on current data and information as an input into planning. The information generated by a responsive information system is too often used as window dressing or supportive ballast for doing what the organization has done in the past or wishes to do in the future. Many reasons are given for not making adequate use of available information. These excuses run all the way from finding fault with the information to a jealously guarded right of the administrator not to be influenced by whatever data may be presented. Such excuses generally must be overcome or circumvented by the demonstrable accuracy and the usefulness of the data generated.

This chapter will be presented in five sections that relate to information systems for planning. The first section considers the sociological implications of an organizational structure and the information system's role and place within that structure. The second section deals with the determination of information needs and decision making. The third part relates to a study of local needs, while the fourth part deals with the design and operation of information systems. A final section provides some insights into the use of information systems for planning.

Sociological Implications of an Organizational Structure

Characteristics of the Information System

As we begin to analyze how information systems can be used effectively in planning, it is critical that we consider the sociological implications of an organizational structure and the information system's place within that structure. First, in order to view these phenomena correctly, some distinction needs to be drawn between *data* and *information,* and the relationship each has to the other should be defined. In the author's view, an information system in its most simplistic form collects data and disperses information. That is, those items that enter the information system are generally entered as quantitative data elements, while the output of an information system generally is some type of configuration of these data that establishes a meaningful qualitative relationship. In this chapter information will be viewed as an analysis and compilation of data (figures and numbers) with meaning for decision making. As an example, it might be more meaningful to an administrator to know that the number of programs and the number of students enrolled in data processing courses were declining rather than to have a list of all the students and programs involved in data processing.

Limitations of an information system. It is important that we recognize the limitations of an information system. Later in this chapter evidence will be presented that shows the strong emphasis vocational decision makers place on the need for information about the attitude and commitment of administrators toward vocational education. Whether or not the information system is the most appropriate method for collecting, analyzing, and dispersing information of this type is questionable. Certainly, an information system may be able to collect and provide data and information upon which some judgment can be made as to the attitude and commitment of an individual or a group. However, these are probably judgments which vocational decision makers can make more effectively than those who run information systems, particularly in determining what data and information may be an appropriate measure of attitude and commitment.

Influence of the human factor. Organizational structure or the sociological environment of an information system does have a strong influence on its effectiveness. We cannot ignore the human factor in any information system. People automatically assign importance to a system depending upon where it fits as a unit in the organizational structure. This level of influence, which others assign, affects the degree to which the information system is able to collect the data required and the extent to which the unit can influence the use of information output in decision making.

If the information system is assigned a spot in the organizational structure which indicates that it is considered to be of only moderate importance, the rest of the organization will assign only moderate importance to the task of providing data and information, and in all probability, administrators will give less than top priority to the use of such information in decision making. While the same argument could be made for every other unit within the organization, there are few instances in which the success of a segment of the organization is so dependent upon the other members of that organization to provide input and to appropriately use output.

Organizational Screens and Controls, Input and Output

Screening effect on human attitudes. In considering the human factor in the spectrum of information collection and use, we must be aware of the various screens or blocking devices through which information must pass before it reaches the ultimate consumer. As an example of how this filtering process works, let us assume that decisions are to be made about programs for disadvantaged students. The first question which must be answered is, "Where are we presently in our efforts to serve disadvantaged students?" The answer to this question depends upon the input from local teachers or administrators who must identify and report the number of disadvantaged students presently being served. If an administrator or teacher is reluctant to recognize the needs of disadvantaged students, the reporting mechanism is going to be influenced by that screen. On the other hand, if administrators feel that they are to receive rewards or approval because of their extra effort to assist disadvantaged students, they may identify and report as disadvantaged some individuals who are on the borderline in needing special assistance. This is a very human and natural response and is not an intent to misrepresent. It is the screening effect of our own personal attitudes and expectations as they relate to other human beings.

On the other end of the information pipeline, as administrators review the information provided about disadvantaged students, their own filtering mechanism comes into play. If an administrator is of the opinion that programs and efforts are to be evaluated on the basis of placement of students, and also believes that disadvantaged students may be less trainable or less employable, the decision may result in fewer programs or less than adequate support of programs for disadvantaged students. On the other hand, if the administrator recognizes the mood of the Congress as expressed in recent legislation, he or she may be inclined to overemphasize the support of programs for the disadvantaged to the detriment of programs for regular students. Again, this is a natural reaction of a decision maker reflecting that individual's view of the educational world and his or her role in it.

Influence on the content of information. This selection process, which sorts out the information which may be fed into the system, or which selects information to be used in decision making, may also influence the content of the information which vocational education transmits to the various publics outside its own system. Many individuals may use this screening process for the purpose of protecting the good image of vocational education. Generally, this strategy backfires, resulting in less support for vocational education because people know so little about it or in damage to the image of vocational education when it becomes apparent that certain facts have been kept from the public. As Lee (1976), head of Project Baseline, says: "Both obscurity and confusion about what vo-ed has accomplished and is capable of accomplishing serve only its critics." He continues:

> One of the things that has amazed me most as a political scientist is the stubbornness with which most vocational educators expect public support on one hand—in fact, cannot exist without it—and on the other hand, hide their accomplishments under a cloud of secrecy. Vocational education has far more to reveal than to hide (p. 35).

Need for factual communication. All in all, this screening process, which ignores useful information, should be avoided or eliminated to the greatest extent possible. It can only destroy the true picture of the need for vocational education and its achievements. The method of avoiding this distortion is to have as broad an input and as complete an understanding as possible on the part of all who are involved in providing data to the information system and in using the output. Administrative decisions need to be viewed in the light of everything known about a situation. We should strive for open and clear communication with all the parties involved in and affected by the program of occupational education.

Communication between Information and Planning Structures

Communication needed on an individual basis. As we think about how various units within an organization communicate with each other, it is important to realize that organizational units, as such, cannot do anything of their own volition. These units are only convenient ways of organizing people to accomplish objectives. Thus, it follows that if communication is to take place between units—in this instance, the information and planning units—the communication must be between the individuals who make up those units.

Accepting the premise that communication affecting organizational units must take place between individuals, we need to consider those conditions that facilitate communication. Individual communication seems to thrive where there is mutual respect, where there is an absence of fear or jealousy, where each party has a contribution to make, where each acts in a supportive manner, and where there is mutual acceptance of the objectives to be reached. Beyond this, communication can be stimulated by physical arrangements that put individuals in close proximity, by example and encouragement from the leadership, and by recognizing and rewarding the results of effective communication. On the other hand, where there is fear or intense competition, where exclusive rights to information are allowed or encouraged, where a lack of communication is accepted or practiced by top administration, where trust is lost, where individuals are not mutually supportive and contributive, or where doubt exists as to the accuracy or reliability of parts of the organization, people become protective and communication ceases.

Clarification of needs and expectations. As a guide for assuring proper and full communication, it is important that the individuals in the planning unit, since they are the major recipients, make perfectly clear to the information people what is required for effective planning. Care needs to be taken in specifying the data needed, the form in which it should be presented, and the criteria for judging relevance and quality. Also, planners need to make it clear that they are aware of the difficulty which information systems people may experience in getting all data needed to do effective planning. Some prioritization of data needs should be indicated by planners.

On the other side of the communication network, it is essential that the information systems people make it very clear to the individuals who are asked to provide data exactly what data is needed, the easiest way to collect the data, and the uses to be made of the data. Beyond this clarification of needs and expectations, the organizational arrangement and the physical arrangement are important in the establishment of effective communication. Administrators should be very aware of those blockages which may hinder or inhibit communication. Are there requirements which state that individuals must communicate through their superiors rather than directly? Are there indications that any communication must involve certain protocols which may be an unnecessary hindrance to rapid transfer of information? The effective administrator must be aware of his or her responsibility in making the communication links as direct and as open as possible.

Formal and Informal Information Systems

Need for informal system to be supportive. Those responsible for establishing the formal information system should realize that an informal system is going to be working at the same time and that caution needs to be taken to assure that the informal system is supportive, or at least not opposed, to the formal information system. If there are informal sources of information which are important in the decision-making process, these sources need to be defined and used in ways which do not circumvent the formal system. As an example, if a decision is going to be made purely on a political basis, or on the input of certain influential individuals, the administration should make this clear to those who are responsible for the formal information system and to those who do the planning. It is counterproductive and detrimental to morale to have information systems people spend a great deal of time collecting and organizing data to answer questions which are likely to be answered based on outside or informal input from other individuals. This does not mean that those informal systems are bad or that they should not be used; it simply means that they must be made to work in conjunction with the formal system and be supportive of it. If the formal system is not to be used in a specific instance, this needs to be stated clearly and understood by all individuals concerned.

Importance of listening and communicating. Elsewhere in this chapter it is pointed out that logic is a poor motivator of people. Pure logic might indicate conclusively that a system, including all relevant information, could give an agency all it needed to make decisions and to defend those decisions. This "logic," which ignores the sociological or human factor, has left many computer specialists and information analysts completely baffled by an administrator's reaction to their computer printout "displays of truth." Those responsible for information must learn to listen to and communicate with that most human of creatures, the administrator. To complete the cycle, administrators must learn to listen more carefully to their many publics and to speak more distinctly to their information specialists.

Information Needs and Decision Making

Importance of Information as a Resource

Kleinschord (1977), editor of *Administrative Management,* said: "Any manager worth his nameplate knows that information—timely, accurate information—is a major product of the Office today and will be primary in the Office of the Future" (p. 23).

Kleinschord also reported on a study by Booz, Allen and Hamilton which projected that by 1985, United States business will spend $350 billion a year on information resources as compared with the $150 billion spent in 1975. Long and Brunn (1974) wrote: "Just as the production line became a necessity for industry, so will management information systems. Large, medium, and small firms will all too soon confront the imperatives of MIS. There is no escape, nor should there be" (p. 13).

Challenge of accountability. Educational institutions are just beginning to acknowledge the importance of information as a resource. Recognition of need is the first step in developing a systems approach. Over the past decade, educational institutions have expanded the role and scope of their mission, responding to strong demand and support from their publics. Phenomenal growth consumed most administrators—the "bigger-is-better" syndrome clouded the vision of many. During this time, there was little necessity for concern with efficiency and effectiveness of operations. Now these same institutions are faced with accountability, and they find themselves poorly prepared to document the results of their educational endeavors. To meet the challenge posed by accountability, institutions have undertaken to refine and/or redefine their long-stated purposes into goal statements. Yet these exercises seem to be academic, with little attention directed toward what is happening for students. When an information system is accountability-based, it becomes the link between the stated goals of the institution and the student outcomes. Institutions exacerbate the accountability problem when they develop information systems tied exclusively to the processes of institutional operations.

A confused goal system. Confusion about information needs and the system, according to Richman and Farmer (1974), reflects a confused goal system of those involved. They state that "one can infer much about what is really important around an educational agency by observing just how well the record system is able to report results" (p. 200). Obviously, in the majority of educational institutions, importance is attached to student grade records and payroll records. If the institution cared less about money or students' grades, it is logical to expect that these parts of the "information system would be as messy as some other parts." The authors also point out that the availability of good information which might show what is really going on is often avoided or suppressed because its surfacing might cause change more quickly than some care to respond. Attempts to extract usable, relevant information are ignored, diverted, and frustrated. These thwarted efforts result in greater camouflaging of goals and objectives. Turning the coin, there exist information pollutants—the collectors of the educational collectibles. Banghart and Trull (1973) explain: "Unfortunately, educators are prone to overstate their requirements and the educational planner many times has an excess of useless data" (pp. 136-137).

Another symptom of the confused goal status of educational agencies is manifested in continual public defeat of bond issues and in legislated evaluations. As evidence mounts attesting to the confused goal status of educational organizations, the institutions at best offer little more than a housekeeping operation of educational endeavors, and at worst become pawns for personal aggrandizement of vested interests for influential institutions; students' needs for growth and development are inconsequential, an afterthought. An illustration of such a pseudo-educator's attitude was embodied in this recently overheard cynical remark, "It's the same kids back in the classroom year after year—only the names change."

Findings of a research study. Substantiation of the confused goal structure, notwithstanding the published institutional declarations appearing in institutional catalogs, was also evident from the results of a recent doctoral research project conducted by Bowers (1976). Bowers concluded from written commentary proffered by occupational management team members in selected California community colleges that not only were the members of the occupational management teams distressed over the inattention of the administration to occupational outcomes of the programs, but they also expressed confusion over the terminology—goals and objectives, in the opinions of several administrators, which seemed indistinguishable and primarily used for window dressing in institutional catalogs. Frustration was expressed over what seemed to them to be a "rehashing of the same old garbage." Team members from seven of the eight colleges in the study identified administrative attitudes about occupational education as the highest priority of all information factors needed. This finding seems to imply that administrative decision makers are uncommunicative, unclear, and/or uncommitted about institutional goals and objectives for occupational education. It further suggests that individual and organizational valuing is a major consideration to management team members of occupational education. It was rare when educational outcomes could be measured by the established goals and objectives. A confused goal status is again apparent.

Vocational Information Needs

What constitutes a good information system. Lee (1976) cautioned a group of state directors of vocational education that to keep pace with sweeping changes in education, they must know what is going on in their programs and what constitutes a good information system. He maintained that such a system makes possible identification of programs where proper training is being provided by supplying information on the kinds and numbers of individuals served, what happens to those students once they leave school, and how much the training received cost.

He also observed that federal requirements will eventually mandate the kind of information system vocational education should develop on its own. Only a few months elapsed before this observation became a reality in the Education Amendments of 1976.

Information needs for decision making. In his treatise called "Immediate and Long-Range Implications of the Educational Amendments of 1976 for Vocational Education," Stevenson (1978) identifies the different levels and roles of vocational education and the information needs required at each governmental level for effective decision making.

Stevenson insists that since vocational education is managed not at the federal level but at the state level, and in many instances at the local level, the information/data needs for decisions relating to effective planning require increasing specificity of the information system the closer the planning level is to the students and programs.

The Education Amendments of 1976 have indeed directed the information which is to be required at the federal level. McCracken (1973) found that nearly 90 percent of the problems faced by the state director required information for their resolution and that available information often failed to reach key decision makers in the form needed and in time to assist in decision making. Malinski (1973) said, "The local vocational and technical manager must be concerned with the information required for policy planning, work planning, and program operations" (p. 10).

Local based information critical. At the local level, the manager appears to be in a strategic position to affect policy and operational decisions influencing student and program performance. Therefore, the quality of locally based or generated information is critical.

Bowers (1976) addressed the issue of information needed by the local occupational management team members regarding effective planning for occupational education at the community college level. According to her study, there are those who feel that the responsibility for designing an information system should be with an analyst; however, the majority opinion is expressed in the following statement by Van Dusseldorp (1969):

> Systems analysts cannot possibly know what information management needs for decision making. Too often management abdicates its responsibility for a system of goals and objectives. . . . In too many cases . . . management has not been willing or has not seen the need to devote its own time and effort to the development of a management information system (p. 33).

A system devised solely by analysts, who have no responsibility for the decision, is unlikely to adequately serve the needs of the decision makers. Furthermore, analysts will eventually be accused unfairly of exceeding their authority. Ainsworth (1977) urged data processors to ask, even demand, that the user define the needs before money is invested. Yet too many educational managers in the design phase plead lack of time to determine what information is needed. It is little wonder that the resultant decisions are viewed with a jaundiced eye.

Basis for administrative decisions. Concerns have been documented over the quality of administrative decisions. Some decisions are based on incomplete or wrong information (Ott, 1973). Others reflect a reluctance and even resistance to incorporate available, relevant information into the decision-making process (Kintzer, 1972).

Biases, fears, risks, lack of decision-making skill, etc., interfere with productive decision making for effective planning. Brooks (1973) observed that objective methods were not common in the decision-making processes of vocational and technical education program planning. These educational managers were making assessments based upon personal experience, authority, or tradition. What seems apparent is that reliable information, if available, is often discounted in favor of the "seat-of-the-pants" syndrome. While exploring the receptivity of community and junior college administrators to a systems approach, Hoke (1973) concluded that although administrators on the whole were open to adopting an operational systems approach, they were not yet involved. The commentary received from many members of the management teams in the Bowers study (1976) strongly suggests little change has come about in the intervening years. Educational institutions are not known for their enthusiastic embrace of a systems concept. Dressell (1971) summarized this concern as follows:

> Some persons regard efforts of increased efficiency in the use of resources with suspicion and alarm. Administrators preferring to operate by the seat of their pants and committees concerned with comprising the emotionally stated convictions of members are not receptive to studies that may provide a firm basis for their deliberations. . . . Decision-making in higher education is simply not a good model of the process as stated in the decision-making objectives formulated for its students (pp. 20-21).

As information is increasingly recognized and accepted as a valued commodity—along with the resources of finance, equipment and facilities, and human effort—proper quantities of information will eventually be every bit as important for effective decision making as the process of collection.

Information and Data

Can information be distinguished from data? Generally, the terms are used interchangeably. Burch and Strater (1974) present an excellent historical perspective of the development of the two terms. The distinction they propose defines data as "raw facts in isolation" which, when placed in a meaningful context by a data processing operation(s), allow inferences to be drawn. They say:

> Information is substantially different from data in that data are raw unevaluated messages. Information is the increase in knowledge obtained by the recipient by matching proper data elements to the variables of the problem. Information is the aggregation of processing data to provide knowledge or intelligence (p. 70).

The process of producing information is dependent on the decision maker's ability and competency to appropriately relate to and translate isolated data into alternatives. Information might be conceived as opportunistic data, data awaiting a sensitive, competent decision maker's skillful honing into a useful format.

The Delphi Technique

When seeking a solution to a problem, the search focusses on inquiry—inquiry made by an expert in the field who provides insight into potentials, options, limitations, and alternatives. The search expands to include other equally knowledgeable persons. As others are queried, it is not common to uncover disparate opinions and judgments. The dilemma of direction confronts the inquirer. One option is to ignore all suggestions; another, to blindly follow a single course; still another is to empanel the experts, charging them with the responsibility to reach by consensus a viable solution to the issue.

Many countervailing forces impinge on the effectiveness of such a group—time, location, and abilities of the members themselves. Ideas for ultimate solutions to the problem are not always given full credibility in an open committee hearing. The suggestions can be discarded when a parading of committee personalities becomes paramount: the prima donnas dominate; the verbally gifted manipulate; the bandwagoners roll, the intellectuals impose. To reduce this sociological and psychological dysfunctioning of committees, Rand Corporation sought, through a written communication design, to provide a screen of anonymity for the panel members so that the merits of an idea can receive appropriate consideration.

The Delphi Technique, a written communication concept, was designed for forecasting. "Project Delphi," (Dalkey & Helmer, 1963) undertaken in the early 1950s,

> was designed to apply expert opinion to the selection, from the viewpoint of a Soviet strategic planner, of an optimal U. S. industrial target system and to the estimation of the number of A-bombs required to reduce the munitions output by a prescribed amount (p. 458).

Seven individuals representing four disciplines comprised the panel. They responded anonymously in writing to extensive questions and subquestions, each impacting on the problem based on his or her area of expertise. The researcher served as a clearinghouse for information. Information feedback was of two kinds: additional information and data requested by panel members to develop their responses and the dissemination of all information factors developed from the individual members' responses. Six rounds were used to obtain consensus.

As the Delphi Technique has been popularized, modifications have been made. Studies using the technique now include the non-data base of attitudinal or perceptual responses. There has also been a shift from a consensus result to a convergent opinion. The latter has the advantage of being achieved in fewer rounds. Also by seeking perceptual responses, the researcher's responsibility to provide supplemental information is reduced, if not eliminated.

Adjusting to one dimension of the Delphi Technique has permitted expansion in another segment. The number of individuals involved has increased, with some studies involving over 800 participants. The measures of central tendency are normally used as statistical treatment of the data. At times, the interquartile ratings are also used.

In summary, the Delphi Technique is a written communication process enabling a meeting of the minds through the use of carefully designed questions which elicit individual brainstormed responses. To be effective, the Delphi Technique must have direct input from its panelists, i.e., the panel generates its own information factors in response to problematic situations presented in question format. It is a proactive panel. Reactive surveys cannot match the sense of inquiry which is fundamental to this technique. The Delphi Technique advances the positive attributes to the committee; it retains the sense of inquiry, protects the integrity of an idea, encourages diverse input, promotes a time frame for development of in-depth, mind-stretching responses, and provides an environment in which one can reconsider and change a previously held opinion. This technique is discussed in more detail in Chapter 9.

Study of Local Needs

Population studied. Bowers (1976) used the Delphi Technique to collect data from occupational management teams regarding what information the team members perceived necessary and usable for each of the eight decision areas identified for effective planning for occupational education. Eight community colleges—selected originally by the Chancellor's Office as a 10 percent stratified random sample of the California community college system, in its first application of the California Community College Occupational Programs Evaluation System (COPES)—were used as the population in the Bowers study. The chief occupational administrator at each institution designated those individuals involved with the management of occupational education. One hundred eleven individuals were named from the eight institutions as members of the management teams for occupational education. Thus, the Delphi Panel was created from those who were closest to the problem area—the need of information for decision making about occupational education. Sixty-four participants completed the study.

Procedures of the study. All participants initially received a letter of explanation, an abstract of the study, a reference sheet containing selected COPES evaluative statements specifically related to each of the eight predetermined decision areas, and Communication No. 1.

For a response to Communication No. 1, each participant was asked to submit units of information perceived to be needed and usable in each of the eight decision areas for effective planning in occupational education. The responses were analyzed, clustered, and at times, translated into an information-needs context. Insofar as possible, wordings submitted by the participants were retained.

The information factors were returned to the panelists as Communication No. 2 with the request to rate them on an 11-point importance-rating scale. Each factor was rated in terms of its perceived importance in the respective decision area. Panelists were encouraged to, and did, submit additional information during the second round. A total of 194 information factors were generated for the eight decision areas.

For Communication No. 3, the median response for each information factor was identified and displayed on an 11-point importance-rating scale. Each participant was asked if he or she was in agreement with the median importance response. If the response was not consistent with the view originally expressed, the participant had the alternative of reconsidering his or her opinion and accepting the median rating. Or the participant could opt to retain a divergent opinion, re-rank the information factor on the importance-rating scale, and support the re-ranked factor through written explanation. Both options were utilized.

All responses to each information factor in Communication No. 3 served as the basis for ranking the means. To have accepted only the median rating would have precluded sufficient discrimination to permit ranking of the factors. The rank order of information factors was calculated in three categories: (a) for each decision area, (b) for each of the eight colleges, and (c) for the entire group of information factors. Subsequent to rank ordering of all factors, the matrix was used to permit examination of selected variables which were, for this study, the eight community colleges.

Decision Areas

As government, business, and industry, and a few educational institutions recognize and respond to the complexities of their roles and responsibilities to meet the increasing and expanding demands of the marketplace, emphasis is placed on consolidating functions into a viable, more flexible organizational structure. As institutions recognize the need for reliable, accurate, and timely information, a linkage is formed between the area of decision and the information needed.

Current literature affords many variations for classifying decision areas. Emch (1958) uses "elements" as the means by which the ends are achieved. Philosophy and objectives represent the ends to be achieved through programs, organization, staffing, facilities, and financing. Banghart and Trull (1973) propose five broad "areas" relating to people, places, movement, economics, and education, with subgroups branching from the major areas. The authors caution that one must recognize that:

> Gathering data differs widely among educational planners. The differences reflect the different events impinging on the educational organization and its environment. Gathering data, therefore, serves as the sensory organ of the educational organization (p. 155).

Three recent research studies in vocational education, Komar (1973), McCracken (1973), and Barlow (1974), presented a wide range of decision areas. Approximately 20 decision areas were identified in these studies.

Decision areas in the Bowers study. The decision areas developed for the Bowers study (1976) were: (a) Program Goals, (b) Advisory Committees, (c) Operational Budget, (d) Program Objectives, (e) Evaluation,

106

(f) Program Planning, (g) Occupational Counseling, Guidance and Placement, and (h) Coordination and Direction. This listing is not to be interpreted as a priority ordering. Fourteen decision areas were initially identified in the COPES evaluation instrument, "Perceptions of Occupational Education Evaluative Guide and Criteria," used in California's occupational evaluation process. To reduce the number of areas to a more manageable number, preference was given to decision areas identified in the 1973 and 1974 *COPES Reports*, highlighted by research and development committees, and emphasized by postsite visitation team reports as the decision areas most in need of improvement.

Relative strength of the decision areas. To determine the relative strength of the decision areas included in the study, the average of the means of information factors in the respective decision area was calculated. Of the decision areas identified for the study, Evaluation held first priority and Program Planning was second; Advisory Committees received the second lowest rating, and Operational Budget was last.

It is clear that the management team members needed a greater number of information factors for each of the decision areas. The largest numbers of information factors were in the decision areas of Operational Budget and Coordination and Direction. The smallest number of information factors perceived to be needed and usable was in the decision area of Occupational Counseling, Guidance, and Placement. The penultimate decision area was Advisory Committees. In both frequency and strength the Advisory Committee decision area accumulated a low rating. The study further revealed that Advisory Committees was the only area in which the chief occupational administrator was perceived to be involved in the decision-making process at all community colleges. With the Advisory Committee decision area confined to the advising function, it would follow that probably the chief occupational administrator has limited influence within the institutions studied.

Information factors identified and used. A total of 194 information factors were generated for the eight decision areas. After prioritizing all information factors, the upper quartile of ranked factors, 60, was highlighted in the study. Examination of the factors showed a clustering into four categories: attitudinal, data, cognitive, and procedural. Table 7 depicts the cluster categories, the number of information factors in each cluster, the percentage each cluster is of the whole, and, most importantly, the ranked importance of each cluster. The rankings were determined by averaging the ranks of the information factors within each cluster.

1. *Data Cluster.* The Data Cluster refers to the factual, untreated, unevaluated message units; raw numbers, such as computer printout statistics; follow-up reports; manpower data reports, etc.

2. *Attitudinal Cluster.* The Attitudinal Cluster includes the attitudes, commitments, and values placed on occupational education by indi-

viduals such as administrators, teachers, business and industry representatives, community members, and students.

3. *Cognitive Cluster.* The Cognitive Cluster refers to special knowledge, competencies, understandings, e.g., licensing and credential requirements, legislative regulations, accreditation criteria, accountability requirements, etc.

4. *Procedural Cluster.* The Procedural Cluster encompasses those factors identifying the processes for occupational education within and/or external to the institution, yet within the education environment.

Four-fold typology. The four-fold typology of an occupational management information system for effective decision making in planning occupational education indicates that more than the commonly accepted computer-produced, data-based information is needed. Although the frequency of information factors in the attitudinal cluster represents only one-fifth of the needed information, this cluster ranked highest in overall importance of the four clusters.

In the segment of the study which examined the governance patterns of the eight institutions relating to occupational education, the chief occupational administrator at only two of the eight colleges was perceived by management team members as being involved with the decision-making process for occupational education. In addition to the stated perceptions of the team members, the organizational charts for the eight colleges supported the expressed views. It was clear from the organizational charts that only two institutions had established a line position for the chief occupational administrator. The hierarchical patterns of the remaining six institutions displayed the chief occupational officer in a staff function, lacking direct-line communications with the instructional staff, the stu-

Table 7

FOUR-FOLD TYPOLOGY FOR AN OCCUPATIONAL EDUCATION INFORMATION SYSTEM

Rank I Attitudinal Cluster 12 Factors 20.0%	**Rank II** Cognitive Cluster 11 Factors 25.0%
Rank III Procedural Cluster 8 Factors 13.3%	**Rank IV** Data Cluster 25 Factors 41.7%

108

dents, or the institution's chief administrator. The teams from each of these six institutions confirmed what was apparent on the organizational chart.

Organizational hierarchical information was obtained in Communication No. 1 when each participant was asked to give the administrative level at which decision(s) were made about occupational education in each of the eight decision areas. It is especially disheartening for occupational education when the chief administrator is perceived as having sufficient input in only one decision area, Advisory Committees. In only one educational institution was the chief occupational administrator charted in a line position with direct access to the institution's chief administrative officer.

To review, the chief occupational administrator in two of eight institutions holds a position in the hierarchical structure which is perceived to affect the outcomes of occupational education. To reconcile the occupational goals as published in each institutional catalog with the "state of the art" as described by the participants who were directly involved with occupational education, attention must be focussed on the concerns previously addressed about goal confusion. Lahti (1973) said succinctly:

> Higher education decision makers often go to great lengths to find out what programs cost but make decisions and formulate plans with little or no idea of what the outcome will be. All too often goals become merely wishful thinking, sterile ideas confined to writing, or a planning process of some fashion to be gotten through and then abandoned (pp. 13-14).

Cluster categories needed for management information system. For the complete management information system, four cluster categories are needed: Attitude, Cognitive, Procedural, and Data. Table 8 illustrates the number of information factors in each cluster category represented by the upper quartile of all information factors.

1. *Attitudinal Cluster.* The Attitudinal Cluster (Table 9), considered the most important category for effective planning of occupational education, includes only about one-fourth of the total upper quartile information factors.

The information factors perceived to be needed in the attitudinal cluster are shown in Table 9. These are the highest ranked factors in the decision area. They are sequenced in Table 9. To make the information factors which have been identified for the four cluster categories more meaningful, the highest ranked information factor for each decision area is presented. It is significant to note the highest overall ranked information factor was in the Program Objectives decision area. It should be further pointed out that information factors in the decision areas of Program Planning and Program Goals ranked second and fourth respectively. Furthermore, attention should be drawn to the fact that management team members clearly signaled their concerns and needs in the area of evaluation. In 1976, the

Congress enacted into law the need for evaluative information expressed by the local management teams.

2. *Data Cluster*. The Data Cluster, which is the more familiar component of current information systems, is shown in Table 10. It contained the largest number of needed information factors; however, it ranked last of the four clusters in strength. Of the occupational information systems now in operation, information on the product is confined to the factors in the Data Cluster. In too many instances, the concern for student input into the decision-making process is not evident.

The ranked information factors for the data cluster are shown in Table 10. The three decision areas ranking as most significant were Operational Budget, Coordination and Direction, and Evaluation. They focussed on information relating to training needs, employer feedback, and the appropriate follow-up information. The National Vocational Education Data and Reporting Systems (VEDS) is currently conducting feasibility studies to collect information on these same factors.

3. *Cognitive Cluster*. The Cognitive Cluster accounts for one-fifth of the needed information factors and ranked second in strength of the four clusters. This cluster impacts on six of the eight decision areas, as shown in Table 11. The three most significant information factors in

Table 8

CLUSTER CATEGORIES OF UPPER QUARTILE INFORMATION FACTORS

Area No.	Decision Area	Cluster Categories				
		Data Mentions	Attitudinal Mentions	Cognitive Mentions	Procedural Mentions	Total Mentions
1.	Program Goals	3	2	1	—	6
2.	Advisory Committees	—	2	—	1	3
3.	Program Objectives	4	1	2	—	7
4.	Operational Budget	6	2	1	—	9
5.	Program Planning	4	1	3	1	9
6.	Evaluation	1	1	4	1	7
7.	Coordination and Direction	6	2	—	3	11
8.	Occupational Counseling, Guidance and Placement	2	3	1	2	8
	Totals	26	14	12	8	60

Table 9
ATTITUDINAL CLUSTER

Area No.	Decision Area	First Ranked Information Factor
1.	Program Goals	Administrative and board commitment to occupational education
2.	Advisory Committees	Faculty attitude toward meeting with and accepting recommendations from advisory committee
3.	Program Objectives	Commitment of board and top administration to occupational education
4.	Operational Budget	Administrative attitudes toward providing financial support of occupational education
5.	Program Planning	Board and top administrators' commitment to occupational education
6.	Evaluation	Employer feedback (attitudes toward evaluation of training programs, satisfaction with student employees, etc.)
7.	Coordination and Direction	Administrative and board commitment to ongoing functioning of occupational programs
8.	Occupational Counseling, Guidance and Placement	Qualification for occupational counseling (attitudes, responsibilities, duties, etc.)

order of importance were Program Goals, Program Objectives, and Program Planning. The information needed emphasized the importance of the relationship between the subject materials and the job market requirements. Planning for programs can be effective only in relation to anticipated changes in the market place.

4. *Procedural Cluster*. The Procedural Cluster related to five of the eight decision areas, with particular emphasis in Decision Area 7—Coordination and Direction (see Table 12). The highest ranked factor in the Procedural Cluster from Decision Area 6, Evaluation, ranked 5.0 overall.

Table 10
DATA CLUSTER

Area No.	Decision Area	First Ranked Information Factor
1.	Program Goals	Community needs (to include manpower supply job availability, labor market analysis, job requirements, employer demands, special populations, etc.)
3.	Program Objectives	Facilities and equipment required and available to meet program objectives
4.	Operational Budget	Training needs of the community, county, and state
5.	Program Planning	Projected facility and equipment needs
6.	Evaluation	Follow-up information (enrollments, retention, placement, levels of training, abilities, student occupational goals and objectives, graduates, drop-outs, completers, number entering trade for which trained, success, etc.)
7.	Coordination and Direction	Employer feedback
8.	Occupational Counseling, Guidance and Placement	Student information (enrollments, desires, needs, placement and retention in industry, evaluation, demand, etc.)

Again the three most important information factors as rated in the decision areas of the Procedural Cluster were Evaluation, Advisory Committees, and Program Planning. These information factors reinforced the need for input from both employed former students and from advisory committee members. Evidence is also sought to ensure that the vocational administrators are involved with the decision-making process for occupational education. This last information factor again demonstrates concerns earlier stated in relation to governance that the occupational administrators in six of the eight community colleges were not perceived as being involved with the decision-making process for occupational education.

Table 11
COGNITIVE CLUSTER

Area No.	Decision Area	First Ranked Information Factor
1.	Program Goals	Knowledge of subject materials
3	Program Objectives	Knowledge of anticipated technological and industrial job requirements
4.	Operational Budget	Program priorities
5.	Program Planning	Changes anticipated in the job market
6.	Evaluation	Input from advisory committees into program evaluation
8.	Occupational Counseling, Guidance and Placement	Knowledge of community agencies providing occupational counseling, guidance and placement services

To summarize, out of the 194 information factors prioritized in the study, 60 represented the upper quartile and were perceived to be needed and usable for effective planning for occupational education. As can be observed from Table 8, in the upper quartile, the decision area of Coordination and Direction accounted for the largest number of information factors and was highly dependent on Data Cluster factors, highlighting employer feedback. For two decision areas, Operational Budget and Program Planning, the most significant information factor required related to training needs and to commitment of the board and top administration.

The decision area for the third highest total number of information factors, Occupational Counseling, Guidance, and Placement, pinpointed the qualifications (attitudes, responsibilities, duties, etc.) of occupational counseling personnel. The decision areas of Evaluation and Program Objectives not only emphasized the importance of the commitment of the board and top administration to occupational education but also added the need to involve employed former students.

The knowledge of subject materials was the priority information factor for Program Goals. For the decision area of Advisory Committees, the procedures for conveying information about program viability in relation to the potential and limitations of the institution carried significance.

In four of the eight decision areas, the second most important informa-

Table 12
PROCEDURAL CLUSTER

Area No.	Decision Area	First Ranked Information Factor
2.	Advisory Committees	Procedures to inform advisory committee members of the institution's capabilities, its potential and its limitations
5.	Program Planning	Program approval by advisory committees
6.	Evaluation	Procedures and criteria for employed former students' input
7.	Coordination and Direction	Evidence that the vocational deans are involved in top-level decision-making and planning for occupational education
8.	Occupational Counseling, Guidance and Placement	Coordination of placement services with: all occupational programs, counselors from other districts and campuses, the community, students, faculty, etc.

tion factor related to the attitude and commitment of top administrators and board members toward occupational education. Add to this the two decision areas identified above, where attitude and commitment ranked first. The need of a component providing commitment and attitudinal information seems imperative if we are to have quality decisions for planning for occupational education.

The information factors were rearranged to determine the upper quartile for each of the eight colleges. The number of information factors identified by each institution ranged from a low of 44 factors to a high of 107 factors. Four of the community colleges identified 44 to 49 information factors, while the other four institutions identified 93 to 107 information factors. The greater the ability of the management team members to discriminate as to the degree of importance each information factor has for its decision area, the lower the number of factors identified.

Summary

Typically an information system evolves through time, in bits and pieces, as requirements dictate. Decision makers for occupational education have traditionally had to rely on their personal experiences, attitudes, and values to formulate recommendations and decisions for the planning of occupational programs. The California Community College Occupational Programs Evaluation System (*COPES Reports,* 1973 & 1974) identified the inadequacies of available information for planning in the community college system. It was the purpose of Bowers' study (1976) to determine the information factors perceived by members of the management teams to be needed and usable to make decisions for effective planning for occupational education. The long-range goal was to contribute to the movement of postsecondary occupational education in California into a more systematic, information-based approach to decision making.

This study carried particular impact for occupational education in the California community college system in that the correlation coefficients of information factors for all colleges were significant beyond the .0001 level. Although the colleges had diverse organizational structures, student body characteristics, geographic locations, numbers of occupational programs, etc., the population used was representative. Thus, the information needs of these institutions were highly correlated and the findings appear to be applicable to the total California community college system.

Using the Delphi Technique, the Bowers study (1976) developed a systematic approach for determining the information needed for decisions in effective planning for occupational education at the local level. With the impact of statewide accountability legislation and the mandate for a federal information system, this study was timely. It can assist state administrators in their efforts to be more sensitive to the local needs and improvements that are considered. The results of the study can be of assistance to local planners by providing a road map of information needs to be modified where appropriate and integrated with the state and federal requirements.

The quality of the data and the efficiency of the information system have very little impact unless the institution knows where it is going, unless the decision makers clearly identify institutional goals, and unless they coordinate the data-gathering process with their efforts to attain these goals. To have refined enrollment procedures but lack student follow-up data erodes institutional credibility. It is incumbent upon the managers to provide the resources to move toward their goals. Information is a resource—it requires a systematic design that will measure the stated goals of the institution.

An unfortunate paradox exists when the occupational management team members do not perceive themselves as being involved in the decision-making process for occupational education. Yet this group and the Congress of the United States, in identifying information requirements for effective planning for occupational education, have clearly demonstrated that the information needs at the local level are not significantly different from those at the national level. It is education's loss that these effective and far-sighted occupational management teams apparently have little influence on the decision-making process. Shannon (1973) wrote:

> The search for better ways of running a college must focus on several essentials, but none more important than the policy makers and administrators themselves. . . . Individuals assigned governance responsibilities can develop the right combinations of energy and resources to serve the college purposes or they can, if inefficient, subvert them. The leverage of authority, the power to make critical decisions about curriculum, admissions, staff relationships, and budgets, if used unwisely, can easily stifle learning or cause it to die of malnutrition (p. 6).

Design and Operation of Information Systems

The Education Amendments of 1976 direct the states to utilize more data-based information for planning and evaluation of state vocational education programs than at any other time in the past. In Title II, section 165(a) of this act, as amended by P.L. 95-40, the legislative foundations for the development and operation of a national vocational education data reporting and accounting system are set forth. As stated, the commissioner of education and the administrator of the National Center for Education Statistics were required to jointly develop information elements and uniform definitions for a national vocational education data reporting and accounting system (VEDS) by September 30, 1977. This system includes information resulting from evaluations required to be conducted by section 112(b) and other information on vocational students (including information on their race and sex), programs, program completers and leavers, staff, facilities, and expenditures.

Obviously this legislation will force each state to modify its management information system in several ways. This section is directed toward the information system for planning. This raises a question: What is the difference between the information system for planning and the state's management information system? As a partial answer to this question, we will assume that (a) planners do not usually make day-to-day management decisions based on the data, (b) their information system needs tend to be long-term, and (c) the system needed for planners would be an information system rather than a management information system.

While the design and operation of information systems for planning may vary from state to state, they generally have three distinct, but interrelated subsystems. These subsystems are an input subsystem which deals with the identification of useful data for planning and procedures for their collection; a data management subsystem which deals with encoding, organizing, and storing source data; and an output subsystem which decodes the stored data and reorganizes them in user-specified formats.

In the past 10 years, there has been a rapid increase in the amount of

116

information and data required and made available for decisions in the planning and administration of vocational education programs. We have had a rapid expansion and a wide diversity of programs. The flexibility required of state departments to move in the direction indicated by need has vastly complicated the situation. With the new legislation, there is a "prescriptive" need for more information, but the problem is much more complex than this. This information must be current, accurate, and available in the form in which it is understandable and acceptable. It must also be combined, molded, and mixed in ways which are meaningful. The information must be packaged so that its application to immediate and long-range problems is apparent. Most importantly, the information should be readily available. In developing the information system for planning, all of the components called for in the new legislation must be included.

Determining People's Vocational Education Needs

Every state has experienced the frustration of determining the need for trained people in an occupation, spending limited capital to buy the facilities and equipment needed to accommodate a program, hiring teachers, and then finding adequate enrollment. It is evident that at some point planners must determine what programs are needed or wanted by people. It is a rather common practice to survey secondary students to determine which vocational programs they would be interested in taking. However, it is not so common a practice to give students information about the jobs for which they might receive training. Before making the decision to enroll in a program, the student should be given job-related information, i.e., the manpower supply and demand for an occupation, beginning salary, possibility for upward mobility, etc.

It also has not been a very common practice for states to conduct surveys of people who are no longer in the public schools to assess their needs for vocational education. Copa (1976), working for the Minnesota Research Coordinating Unit, developed a technique that used census tracts as the basis for a mail-out survey to households. This technique motivated Oklahoma to utilize a telephone survey to get similar information. Both the Minnesota and Oklahoma studies attempted to assess the need for vocational education of people 18 years old or older. The following information was requested from participants:

1. Job-related questions
   a. Their job title, full-time or part-time employment, how long they have worked at their job, whether they will be looking for another job in the near future.
   b. If not working, how long they have been looking for a job, whether they have had help in looking, and if so, by whom.
   c. If they are not working or looking for work, what they are doing.
2. Training-related questions
   a. Whether they would like to have more job or employment-

   related training and, if yes, for what reason and for what jobs they would want to be trained.

   b. The best day and time for employment-related training, and any serious problems that would prevent them from attending an educational program.

3. Other types of education, hobbies, leisure time wanted and how it would be used.
4. Sex, year of birth, grade level completed.

This information assists in planning vocational education programs for adults.

Determining Manpower Requirements of the Labor Market

It is a mistake to train people for jobs that are not available. This can and does happen on occasion when a state or school district looks at only "what the people want." Through its state-affiliated agency, the Employment Security Commission, the Department of Labor provides the best manpower demand information available. The Occupational Employment Statistics (OES) program is the latest development in the long list of improvements. The OES program bases its current occupational information on a comprehensive employer survey to obtain occupational employment and staffing patterns of industries in the state. This information is used to build a matrix. Then industrial employment projections are added to the matrix to obtain the occupational employment patterns and projections.

Determining Manpower Supply and Demand

The Education Amendments of 1976 direct the organizing of a State Occupational Information Coordinating Committee (SOICC) to help provide planners of several agencies with the best possible occupational information. The SOICC is also directed to provide supply and demand information on vocational occupations. Oklahoma is in the process of publishing its tenth annual Occupational Training Information System (OTIS) Report. This is a publication of supply and demand of vocational occupations in Oklahoma. This publication will provide tables of information on the statewide totals: two Standard Metropolitan Statistical Areas (SMSAs) and the balance of the state divided into six approximately equal populations.

The National Occupational Information Coordinating Committee (NOICC) and the SOICC will work together to develop information elements and uniform definitions for a national vocational education data reporting and accounting system. All states that now have a vocational supply and demand system will have an easier job in the future with a standardized procedure and definitions of all input into the system.

States that have not had the supply of and the demand for vocational occupations available have often made errors in planning by determining program growth based on the demand information alone. Occupations with a high turnover rate and those that one can get into easily with little or no institutionalized training required create the largest problems.

Information Needed for Planning

Finance is an essential component of planning. Administrators and planners need to know the federal, state, and local expenditures by each of the designated subparts, according to level of program, in the new legislation. Even though the national vocational education data reporting and accounting system (VEDS) will probably not require the state and local expenditure breakout, administrators and planners need the data to know the percentage breakout of state and local monies in relation to federal funds.

Facilities information should be maintained to enhance effective planning. This is a difficult area, for states vary considerably on the data collected and maintained. The information should include the number of classrooms, shops, and laboratories for each vocational program, the capacity of each, and the hours used by each during the school week. Some state systems will contain much more detail, such as the square footage of each facility, age, initial cost, etc.

The information system must contain information on teachers and staff. This component should provide information on teachers by program area, sex, race, handicap, language spoken, full-time equivalent, and the number of positions not filled or filled inadequately. Also included should be the number of administrators and teacher support staff. Several states studied the projected need for vocational teachers to supplement the present staff.

Student Accounting System

Information concerning the number of vocational programs, student enrollment, completers, and leavers is essential for planning. This component should have individual student information by program and by school district. Each student should be identified by race, program level, sex, handicap, disadvantage, English-speaking ability, social security number or other unique number, and occupational objective. There are other bits of information that states gather: age, grade level, abilities in reading, writing, mathematics, etc. This kind of information combined in various categories should provide planners with most of the information needed.

The student accounting component plus finance are, in the author's opinion, the most essential ingredients of an information system and should be very carefully designed to accomplish the objectives of vocational education. One of the most crucial decisions in the student accounting system is determining the method to be used in following up individual students. Several of the major methods are: (a) the state department follows up individual students, (b) the state department has the local school district follow up individual students, (c) the state department has the vocational teacher follow up the individual students, (d) the state department follows up a sample of students. In any method, there are problems in following up students.

It is important that a state identify the advantages and disadvantages of each follow-up method before selecting one. Some of the criteria to consider are cost, accuracy, and validity. One common problem for many states is in attempting to follow up the universe or total population, but getting only a 40 to 80 percent response. They need to increase the validity of their responses by checking on the nonrespondents. The nonrespondents may represent a group with certain special needs that should be considered in planning.

A sample of the population may be adequate to secure the desired information if it is properly secured. The California RCU completed an excellent study using a sampling technique to follow up vocational students. They found it necessary to stratify an ethnic classification and grades in school to eliminate bias. Whatever follow-up method a state might use needs constant maintenance.

Use of Information Systems for Planning

Data, Information, and Decisions

Decisions are being made and will continue to be made without regard for the availability of information to support or to assist in decision making. Decisions do not wait until information comes along—problems are solved and questions answered as they occur. This puts a great deal of responsibility upon the provider of information and upon the planner or decision maker. It means that, working together, these individuals must attempt to anticipate from experience and from the situation the information which will be needed in order to properly respond at some future decision point. If the information needs can be estimated accurately, the problem of providing the information is greatly simplified. If the planner or the decision maker is unable to specify the information that is going to be required, the likelihood of being able to obtain that information when needed is reduced.

How can we predict what information will be needed at some future time? While it is impossible to predict with total accuracy, we should be able to give some indication of what the needs are going to be. Many times there are early warning signs of changes which are about to occur or crises which may be arising. Legislative discussions relating to vocational education are good indicators of what is likely to happen. Societal changes which appear to be of major importance also should give us indications of what our decision-making needs may be in the future. For example, the need to serve minorities better should have been apparent a number of years ago, and vocational education could have been in the process of collecting the kinds of data and information which would be needed to make decisions relative to these groups. Administrators may be so involved in day-to-day operational procedures that they do not take time to reflect on past emergencies and attempt to foresee future needs. This is a time-consuming activity and always very difficult and frustrating. Administrators need to be assisted by a component planning unit in looking at past information requirements and attempting to forecast future needs.

Cooperation among Information and Planning Systems

The past experience of the authors in working with information systems, planning, management, and decision making has led to the conclusion that the level of maturity of these components must be generally the same if they are to communicate effectively with each other. The maturity, or level of sophistication, of the planning unit and the information systems unit must be on a par if these units are to be mutually supportive. Each component must grow along with the others and must be able to see the total process of decision making rather than hold an immature view of its own role and experiences as unique and separate from the other parts of the system.

One of the major problems experienced in meeting the requirements of the Education Amendments of 1976, which specify that a broad spectrum of people be involved in developing the state plan for vocational education, is the fact that many of these people lack sufficient experience and sophistication to be effective in assisting with the planning process. People with years of experience in planning vocational education have been somewhat disappointed at the input provided by those individuals asked to assist with the planning process. This does not mean that no good ideas were expressed; it does mean that a wide variety of individuals cannot be fully effective until those individuals have had the experience required to develop a level of maturity in viewing the planning process that will enable them to adjust their thinking to a broader view. This situation seems to be common throughout the country.

This same need for maturity appears to be true in connection with information and planning units being able to work together, to communicate fully, and to support each other. The planning units seem, at least in the eyes of the information people, to have an insatiable appetite for data and always to want it in a different form from what is being presented. On the other hand, planners may feel that the information system is not being fully responsive to their needs. With proper experience in understanding the whole decision-making process, of which information systems and planning are only a part, individuals become more adept at adjusting to the needs of others.

This maturity can be developed only through experience. Too often our expectations for newly created organizational entities far exceed their ability to produce. We have to walk before we can run, and if one unit is in the running stage and the other is in the crawling stage, conflict and disappointment on both sides are inevitable. It is extremely important that the various segments of the decision-making mechanism be given the time and opportunity to mature. Vocational education has received the mandate in recent legislation to perform informational and planning functions, with instant results expected. Any state that did not foresee the need of and the forthcoming demand for a more sophisticated information system and planning capability certainly was not looking at the real world.

No longer can we in vocational education expect to operate in isolation or to be solely responsible for the decisions which we make or the outcomes which we set for ourselves. This should be a consideration for all of those who are involved in financing, participating in, and receiving the output of the training programs which we provide. Thus, the systems that work together to collect, analyze, and package the data, and to use that data in the planning process, must be nurtured and protected by those in charge of vocational education if we are going to develop the kind of sophisticated, responsive system which the public and legislation are demanding.

Using Data and Information to Effect Change

Copa (1976) raised the question, "How much hard data would it take, and under what circumstances could that data be presented so as to bring about changes in a decision or in the thinking of an individual administrator?" This is an extremely intriguing question that deserves careful consideration.

We continue to hold many attitudes which obviously should be changed in light of the mass of data that indicates a more logical position. For example, all of the data relating to sex stereotyping and sex bias as it exists in vocational education indicate clearly that women are not being provided with the broad spectrum of career selection available to men. This situation is illustrated in both the data related to training and the information which describes career advancement. All the data point to the fact that females do not have as broad an opportunity for training as men, do not enter as broad a spectrum of jobs as men, and do not get paid as well as men. It is obvious, then, that sex stereotyping and discrimination exist. Furthermore, it is obvious as we study the situation that this is unfair and morally wrong.

It should follow that, with this preponderance of data and information, the existence of sex stereotyping would be short-lived and would be rapidly eliminated. This is not the case. While some progress is being made, it is very slow and at the rate that we are changing, it will take years to accomplish. The most optimistic view that the authors have seen is Maryland's objective of having sex stereotyping completely eliminated from all vocational education in five years. This seems to be a very optimistic objective and possibly an unrealistic one.

This example demonstrates that data alone may not be as effective in bringing about change as one would expect. There must be additional

122

forces. An old administrative law says, "To expect people to act logically is illogical." There are a great number of factors which influence people to change or to remain as they are, and data and information appear to be somewhat down the list below fear, rewards, biases, emotions, and many other strong forces.

The question then arises, "If information is to be used to effect change, how can it best be done?" As we collect and analyze and present data, we need to be conscious of those things which may influence people. Many times the need of an individual for training may be more important than finding immediate employment. The futility and frustration of people trained for occupations which do not exist may be strong factors in motivating program change. The financial situation and the rewards which may be produced by changed action are strong motivating factors. It may be concluded that some motivating incentives should be attached to the data if change is to occur. We should not expect that data and information are going to be very effective in influencing change unless more forceful motivators are included.

Needs-Based Planning

Probably one of the most powerful motivators is the expression of needs and the urge to meet those needs. Identifying needs and providing ways of fulfilling those needs can be strong motivators for vocational education to change and to progress with the changing situation in the labor market. Our needs analysis, which is part of the information gathering and analyzing process, should be directed at specific questions. Needs analysis should start with those questions which must be answered. Needs should be related to specific segments of the population or to specific users of the product of vocational education. Our strongest supporters are those people whose needs have been met, whether they are people who have received training in vocational education and thus are able to live a more satisfying and productive life, or whether it is the employer who has identified a need and had that need satisfied through people trained in vocational education. This symbiotic relationship is the developing and strengthening process by which vocational education can itself grow and can assist the society and the economy to grow and change. We should be able through our information system to identify the unmet needs both of individuals and of business and industry and use those needs to plan vocational education programs that will serve society effectively.

References Cited

Ainsworth, W. The primacy of the end user. *Infosystems 24(4)*, April 1977, pp. 46-48.

Banghart, F. W., and Trull, A., Jr. *Educational planning*. New York: Macmillan, 1973.

Information Systems for Planning

Barlow, M. L. *Opinions of community college presidents and deans of occupational education concerning a doctoral program to prepare occupational education administrators.* A pilot study. Bethesda, Md.: ERIC Document Reproduction Service, ED 087 511, 1974.

Bowers, E. M. *Occupational education information needs and governance patterns of management teams in selected California community colleges.* Unpublished doctoral dissertation, Oklahoma State University, 1976.

Brooks, D. E. *The development of a decision model for vocational-technical education planning.* Unpublished doctoral dissertation, Kansas State University, 1973.

Burch, J. G., Jr., and Strater, F. F., Jr. *Information systems: Theory and practice.* Santa Barbara, Calif.: Hamilton Publishing Company, 1974.

Copa, G. *People's need for additional job training: procedure for assessment.* Minneapolis, Minn.: Minnesota Research Coordinating Unit, University of Minnesota, 1976.

COPES Report. Sacramento, Calif.: Office of the Chancellor, California Community Colleges, 1973.

COPES Report. Sacramento, Calif.: Office of the Chancellor, California Community Colleges, 1974.

Dalkey, N., and Helmer, O. An experimental application of the Delphi method to the use of experts. *Management Science 9(3),* April 1963, pp. 458-467.

Dressell, P. L. Nature of institutional research in self-study. *Institutional research in the university.* San Francisco: Jossey-Bass, Inc., 1971.

Emch, A. F. *Long-range planning for colleges and universities 36.* Proceedings of the Association of Governing Boards of State Universities and Allied Institutions, Annual Meeting. Burlington, Iowa: The Association, 1958, pp. 41-57.

Hoke, C. H. *An appraisal of the acceptance and utilization of the systems approach as an operational model by selected administrators in a sample of community and junior colleges.* Unpublished doctoral dissertation. The American University, 1973.

Kintzer, F. C. *Decision making in the multi-unit college.* Bethesda, Md.: ERIC Document Reproduction Service, ED 056 687, 1972.

Kleinschord, W. A. Information, yes, but how much and in what form? *Administrative Management 38(1),* January 1977.

Komar, J. J. *The qualifications, positions, and problems of chief administrators of vocational-technical education in public two-year colleges in the United States, with special reference to Michigan.* Unpublished doctoral dissertation, Michigan State University, 1973.

Lahti, F. E. *Innovative college management.* San Francisco: Jossey-Bass, 1973.

Lee, A. M. *Where do we go from here in vocational education?* Speech presented to the annual conference of the state directors of vocational education, May 5, 1976.

Lee, A. M. Facing up to the vo-ed information demand. *School Shop 36(1).* Ann Arbor, Mich.: Prakken Publications, September 1976.

Long, M. I., and Brunn, R. J. MIS implications for top management. *Infosystems 21(10),* October 1974, pp. 24-29.

Malinski, J. F. *Planning techniques for local programs of vocational education.*

Bethesda, Md.: ERIC Document Reproduction Service, ED 062 518, 1973.

McCracken, J. D. *Information needs of state directors of vocational education.* Columbus, Ohio: The Center for Vocational Education, The Ohio State University, 1973.

Ott, J. M., Fletcher, S., and Turner, D. G. Taxonomy of administrative information needs: An aid to educational planning and evaluation. *Education Technology 13(5),* May 1973, pp. 29-31.

Richman, B. M., and Farmer, R. N. *Leadership, goals, and power in higher education.* San Francisco, Calif.: Jossey-Bass, 1974.

Shannon, W. G. AACJC approach, thoughts on good governance. *Community and Junior College Journal,* October 1973.

Stevenson, W. W. Immediate and long-range implications of the educational amendments of 1976 for vocational education. *Information analysis series.* Columbus, Ohio: The Center for Vocational Education, The Ohio State University, February 1978.

Van Dusseldorp, R. Some principles for the development of management information systems. *Management information systems in higher education: The state of the art.* Johnson, C. B., and Katzenmeyer, William G. (Eds.). Durham, N.C.: Duke University Press, 1969, pp. 15-43.

CHAPTER 5

USING RESOURCES TO SUPPORT PLANNING FUNCTIONS

Marjorie S. Stewart, Betty C. Powers, Patricia D. Murphy and Richard K. Crosby

Any legislation passed by the United States Congress which focusses on education will require adequate planning on the part of its publics. Vocational education is no exception. It received a clear mandate for more effective comprehensive planning in the Education Amendments of 1976. In fact, one purpose of the act is "to assist states in improving planning in the use of all resources available to them for vocational education and manpower training" (p. 2169).

Resources Needed to Support Planning Functions

The emphasis upon resources leads to the question, "What resources are needed to support planning functions?" A review of the literature indicates that the authors are in general agreement as to major categories of resources needed to support the planning function. Dunham (1977, p. 26) used "the four I's: information, interest, involvement, and initiative" as his categorization of resources needed. This author also stressed understanding and a system for communication as vital components in planning.

Hansson (1968, p. 61) said, "Money, manpower, and data are the three major classifications of resources needed for planning." He went on to say, "Planning is both time-consuming and expensive. Therefore, a sense of commitment to, and support for, planning must be present in the administrative structure of the organization."

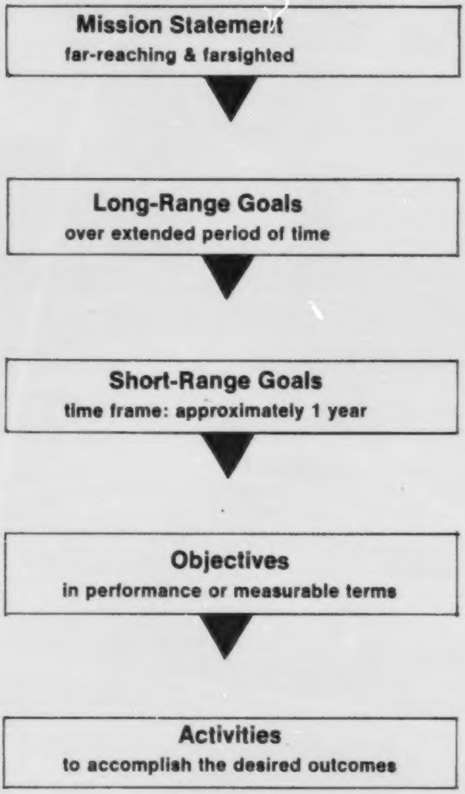
Mission Statement, Goals, and Objectives

Few educators would argue with the observation that it is difficult to tell whether one has arrived at a destination if the desired destination were not identified before the journey began. This statement is true for planning, as well as for all other educational endeavors.

Of paramount importance in planning a vocational education program is a specifically defined mission statement indicating the overall purpose of the program. The planner must have a clear understanding of why the organization exists. Is its primary purpose to train people for jobs or help persons become employable? Are the jobs for which people are being trained professional, highly technical, skilled, or semiskilled? What is the mission of the organization for which the plans are being formulated?

Planning was arranged in hierarchical levels by Dunham and Price (1973), as illustrated in Figure 4. From high to low, the hierarchy includes the mission statement which the authors emphasize as being both far-reaching and farsighted. The second level is the long-range goal which outlines what the organization expects to accomplish over an extended period of time.

Figure 4
PLANNING BY HIERARCHICAL LEVELS


Mission Statement
far-reaching & farsighted
Long-Range Goals
over extended period of time
Short-Range Goals
time frame: approximately 1 year
Objectives
in performance or measurable terms
Activities
to accomplish the desired outcomes

The long-range goal leads to short-range goals which are planned to be accomplished in a time frame of one year. From these short-range goals, objectives indicating the desired outcome in behavioral or performance terms are derived. The final step in the hierarchical arrangement is formulating the activity or activities necessary to reach the objectives in order to elicit the desired behavior or performance. Typically, educators approach this hierarchy of planning in a "cart before the horse" manner, and the planning process seems to have little connection with the mission statement, policies, or the priorities of the educational organization for which the planning is being done.

To ensure that the desired outcome for an educational program is being reached, it is imperative that the program planners have a clearly defined mission statement regarding the educational organization. The mission statement needs to be reinforced with a statement of the basic educational policy and priority for the organization. The need for sound policies and appropriate priorities for comprehensive planning in vocational education is discussed in Chapter 1.

Information

As noted in other chapters of this book, accurate facts and basic information are the foundation for planning. This information should include any research which has been done regarding the vocational program being planned as well as any follow-up studies regarding the value of the specific program. Reinhart (1971, p. 38) identified the lack of relevant data regarding the value of vocational education programs as the "chief bottleneck to planning." He concluded that this absence of pertinent data forced managers to "direct a multi-billion dollar space-age enterprise by intuition."

The National Advisory Council on Vocational Education (1970) has noted that the most serious constraint affecting planning and evaluation at the national level, as well as at all other levels, was the lack of adequate baseline data on vocational program operations. Thus, accurate research and unbiased reporting of the research become vital components of the planning process and, consequently, key resources needed for effective planning.

Other types of information needed for planning include projection data on manpower needs, enrollment, and economics. Accurate assessments must be made of the strengths and weaknesses of existing programs. Subsequently, this information should become another resource component in the planning process. A third type of information needed for planning is knowledge of the critical issues and problems facing the vocational program being planned.

Accurate information becomes a vital cog in the wheel of planning, since planning requires the collection, interpretation, and verification of large amounts of data. In fact, Hansson (1968, p. 61) said, "Planning done without adequate research is probably no more effective than any other off-the-cuff enterprise."

Personnel

The majority of educators would have to agree that one basic key to success in any educational activity is the personnel involved in the endeavor. This is particularly true with planning. But what types of personnel are needed to plan vocational education programs?

First, we need people with expertise in the process of planning. Leaders in vocational education should tap the talents, skills, and knowledge of persons in business, industry, and government who have had considerable experience in planning. Such people may be employed as planners, or they may be asked to serve as members of advisory groups on vocational education and manpower development.

A second category of persons needed to carry out the planning function includes persons with skill in computer programming and data analysis. As noted in this chapter, we are dealing with vast amounts of data—amounts far too great to compute manually, or to analyze individually, without the aid of a computer.

Personnel with expertise in vocational education are, of course, a basic resource for planning vocational programs. These people must be farsighted and open-minded, with an optimistic vision about the future of vocational education. They must show the determination, endurance, and courage to translate this vision into a feasible plan of action. As Howsam (1968, p. 85) stated, "Nothing is more important to the success of planning than serious self-examination to determine whether the planners, themselves, are capable of thinking in terms that are not outdated." Thus, it would seem that the most critical characteristic of the personnel resources needed for planning is that of being able to determine which resources are not now and will not become outdated.

Adequate Funding

Without adequate funds to carry out the planning process, the usefulness of the plan itself will be greatly reduced. Directives and guidelines are often issued; however, if the organization does not possess the funds to accomplish these directives, it is improbable that the directives will be followed.

One of the most vital resources requiring financial backing is that of time: time for reading, time for thinking, time for planning, and even time for dreaming. There can be no argument that planning is a time-consuming process, and that money spent for time to travel and think is money well spent. However, since time is an intangible resource, some administrators are reluctant to allocate adequate funds to pay for the time needed to support the process of planning.

Personnel engaged in planning should have allocated to them both the time and money necessary to attend professional meetings concerning planning for vocational education. Through the exchange of ideas at such professional meetings, the vocational educator becomes more knowledgeable about planning programs and about essential details of the planning process itself.

Consultants are another resource that requires adequate funds. "On-the-job" training is an excellent method of learning. Hiring a consultant to come to the site of the proposed program gives this expert a clear picture of the situation and an understanding of the problems facing the persons responsible for program planning. Thus, the advice and suggestions of the consultant become relevant to that specific situation.

Additional resources needed for planning are those of facilities and supporting services. For example, planners should have access to computers in order to gather, retrieve, store, and disseminate new information.

Administrative Structure to Support Planning

An administrative structure which will facilitate two-way communication is a critical resource for the planning function. Persons planning vocational programs must maintain an exchange of ideas with their superordinates and subordinates as well as their co-workers within the organization. Planning cannot succeed if it is handed down as a product solely from the administration, nor can it succeed if it merely comes up from the ranks.

The administrative structure must allow for an exchange of ideas and reasonable access to persons at all levels of the organizational structure if the planning functions are going to be effective. The end result of an open organizational structure is an atmosphere which encourages ideas from all personnel within the organization, thus facilitating the planning process.

The resources needed to support the planning function are many and varied; however, they can generally be categorized as money, personnel, information, and facilities. These four categories cannot be arranged in a hierarchical order because the absence of any one of them weakens the planning function within the organization.

Wright (1969, p. 13) stated, "Resource identification is a never-ending activity which continues as long as there is planning of any kind to be done." However, planning must be approached on a realistic basis. Planners cannot afford to spend their time and efforts in seeking the impossible dream. There is a magic mix of idealism and realism which, when combined with the resources needed for planning, will result in a viable and logical plan for vocational education programs.

Approaches to Securing Needed Resources

At least three general approaches are useful in securing resources for planning in vocational education. The first approach is to be aware of and take advantage of the many resources that are available at the national, regional, state, and local levels. A second group of resources is available on a competitive basis. A third approach is to create new resources.

Finding Out What Resources Are Available

The Education Amendments of 1976 provide for many resources for planning in vocational education. These resources are available at the national, state, and local levels to assist vocational education personnel in program improvement and supportive services pertaining to secondary, postsecondary, adult, or higher education.

National Network for Curriculum Coordination. The primary purpose of the National Network for Curriculum Coordination in Vocational and Technical Education (NNCCVTE) is to coordinate activities in curriculum matters and to promote the utilization of materials. The National Network publishes a quarterly newsletter containing information on activities of network centers, legislative information of interest to curriculum personnel, U. S. Office of Education projects or products, and input from states regarding their needs and curriculums being developed.

A recent issue of the NNCCVTE newsletter included information about the following items: criteria for evaluating business education programs; a catalog of 416 titles of curriculum materials; the professional responsibilities of business educators; a handbook for workshops on sex equity in education; a bibliography on women in nontraditional occupations; a slide-tape series on forest technology; booklets on ornamental horticulture; and other areas of interest. The newsletter is available from each state liaison representative.

NNCCVTE functions through six regional centers; Northeast, Trenton, New Jersey; Southeast, Mississippi State, Mississippi; East Central, Springfield, Illinois; Midwest, Stillwater, Oklahoma; Northwestern, Olympia, Washington; and Western, Sacramento, California. The regional centers identify curriculum needs, seek materials to satisfy these needs, share materials developed within the region and by the National Network, provide information on available curriculum materials through newsletters, and aid in the diffusion of materials through workshops and other inservice activities.

Each regional network publishes an annotated listing of curriculum materials at least annually. Copies of curriculum materials are submitted by individuals and states through the state liaison representative to the regional network center. These curriculum resources are then shared among the states in the region. Perusal of these catalogs will help in finding curriculum materials to aid in planning. Some of the materials can be mailed on a short-term loan basis, some of them are for sale on a cost-recovery basis, and others are available on microfiche.

Throughout a region, vocational and career education materials are available from the regional center. Regional centers can assist in a search for materials developed within that region or in other regions of the network. Some centers have staff available to help in planning personnel training workshops and to assist in curriculum development, inservice training, or program design. The regional centers also publish newsletters containing information on workshops, new materials, and abstracts of materials received. Upon request, one can be put on the mailing list by the state liaison representative.

Vocational-Technical Education Consortium. In addition to research and development efforts, the Vocational-Technical Education Consortium of States (V-TECS) encourages and promotes the adoption of performance-based instruction in vocational-technical education programs. V-TECS includes 16 states, plus representatives of the U.S. Air Force, U.S. Navy, and the business/labor community. V-TECS produces catalogs of performance objectives, criterion-referenced measures, performance guides, and associated tool and equipment lists to serve as a basis for curriculum development. The catalogs must meet certain quality control standards and are available to members of the consortium.

Mid-America Vocational Curriculum Consortium. While V-TECS develops catalogs of tasks as a basis for curriculum development, the Mid-America Vocational Curriculum Consortium develops curriculum materials. This consortium includes 12 states, with its central office in Stillwater, Oklahoma. As a result of meeting together through the regional centers of NNCCVTE, curriculum personnel recognized the duplication going on regionally in curriculum development and the pressing need for curriculum materials in other areas. The Mid-America Vocational Curriculum Consortium was organized to extend joint efforts in the actual development of curriculum and instructional materials. States within the consortium adopt or adapt materials developed by other states. For example, instructional materials developed by New Mexico for horticulture are being used by Colorado, North Dakota, and Oklahoma, rather than each state spending additional resources to develop its own materials.

Bilingual Education Center. Federal monies are used to support several types of centers to assist with bilingual education: training resource centers, materials development centers, and dissemination/assessment centers. These centers exist to assist states in serving students with limited English-speaking ability. If one is seeking materials to use with bilingual students, these centers have help available.

Educational Resources Information Center. The Educational Resources Information Center (ERIC) is a nationwide information network for acquiring, selecting, abstracting, indexing, storing, retrieving, and disseminating education-related material. ERIC provides for early identification and easy acquisition of reports of interest to the education community. ERIC functions with 16 clearinghouses, each responsible for a particular educational area. Those of special interest to vocational educators include: Career and Vocational Education at the Ohio Center for Vocational Education; Counseling and Personnel Services at the University of Michigan; Educational Management at the University of Oregon; Higher

Education at George Washington University; Information Resources at Syracuse University; Junior Colleges at the University of California at Los Angeles; Rural Education and Small Schools at New Mexico State University; Teacher Education at the Educational Testing Service, Princeton, New Jersey; and Urban Education at Teachers College, Columbia University. The ERIC clearinghouses prepare bibliographies and interpretive summaries of research which are available as microfiche or paper copies.

Resources in Education (RIE) is the monthly publication of ERIC which contains abstracts of available materials and reports. Computer searches are available through state departments of education or the research coordinating units.

Resources in Vocational Education. Abstracts of instructional and research materials in vocational education are published in *Resources in Vocational Education* (RIVE). This new bimonthly publication replaces *Abstracts of Instructional and Research Material* (AIM/ARM) and is a subset of *Resources in Education* (RIE). RIVE materials are available on microfiche, as are materials abstracted in RIE. Information relevant to the field of vocational education is identified in RIVE for use by researchers, curriculum specialists, teachers, administrators, supervisors, and students.

Educational laboratories and research and development centers. Educational laboratories and research and development (R & D) centers are funded through the National Institute of Education (NIE). A description of the work of the laboratories and centers may be found in *Institutional Profiles of Education and R & D Centers* (NIE, 1976). Newsletters, bulletins, bibliographies, and research reports are available from these laboratories and centers.

There are 17 laboratories and centers in operation throughout the United States. They are as follows:

1. Appalachia Educational Laboratory, Charleston, West Virginia
2. CEMREL, Inc., St. Louis, Missouri
3. Center for Education Policy and Management, Eugene, Oregon
4. Center for Social Organization of Schools, Baltimore, Maryland
5. Center for the Study of Evaluation, Los Angeles, California
6. Center for Vocational Education, Columbus, Ohio
7. Far West Laboratory for Educational Research and Development, San Francisco, California
8. Learning Research and Development Center, Pittsburgh, Pennsylvania
9. Mid-Continent Regional Educational Laboratory, Kansas City, Missouri
10. National Center for Higher Education Management System, Boulder, Colorado
11. Northwest Regional Educational Laboratory, Portland, Oregon

12. Research and Development Center for Teacher Education, Austin, Texas
13. Research for Better Schools, Philadelphia, Pennsylvania
14. Southwest Educational Development Laboratory, Austin, Texas
15. Southwest Regional Laboratory, Los Alamitos, California
16. Stanford Center for Research and Development in Teaching, Stanford, California
17. Wisconsin Research and Development Center for Cognitive Learning, Madison, Wisconsin

National Institute of Education. Since its inception, the National Institute of Education (NIE) has made its materials and reports available to the education community. The *Catalog of NIE Education Products* (NIE, 1975) includes information on educational products developed with federal research and development funds. In the section "Education and Work (Career Education)" are descriptions of products available in administration and staff development, career awareness and exploration, career counseling, and work-experience-based programs. Vocational educators will find valuable resources for program planning in this catalog.

Research Coordinating Unit Network. Research coordinating units (RCUs) have in operation a sharing network for materials submitted to each state RCU. Reports of research and demonstration projects funded through any RCU are shared with all other RCUs. These materials are available in states from the RCU directors.

Other resources. A myriad of resources are available to teachers, administrators, and supervisors in vocational education to assist in program planning and development. Those suggested previously are not exhaustive of materials available. There are other general sources such as state and local curriculum guides, publications from textbook companies, and educational resource materials from industry and commercial companies. There is no need to start at the beginning each time one plans and develops a new program, when someone in another state or community may have already done planning which can be adapted to a given situation. Many resources are available—one has only to seek them out. The question is: Will we do it?

Competing for Resources

Resources open to competition include awards made for contracts and grants and awards to individuals for professional development. Not everyone will be able to acquire these resources. Only those who put forth great effort will secure the available grants. It is crucial to keep informed as to the availability of competitive resources and of the deadlines for submitting applications. It is also necessary to be skilled in preparing proposals. Ask anyone in the "grantsmanship game"!

The Education Amendments of 1976 (Subpart 3, sections 130-136) encompass the activities for which federal vocational education funds are available through contracts and grants for improving vocational education programs. In order to obtain the resources to support these activities, one usually must prepare and submit a proposal. One needs to develop skills in the preparation of proposals; the task is not overwhelming and assistance is available.

The annual meetings of the American Vocational Association and the American Educational Research Association often include a presession on proposal writing. A good graduate program in vocational education will include the development of competencies needed to prepare proposals. The most helpful references for the beginning proposal writer are *How to Prepare a Research Proposal* (Krathwohl, 1977) and *Grants: How to Find Out about Them and What to Do Next* (White, 1975). The state RCU director may also have guidelines for the preparation of proposals or be able to offer assistance.

Basically, the proposal should present one's idea of a problem and its solution. The proposal should describe *what* one is going to do, *how* one will do it, and *why* it is important. All proposals include these three components, whether the proposal is written in response to a Request for Proposals (RFP) from a national or state funding agency, as an unsolicited proposal, or as a proposal presented to a graduate study committee or a local administrator.

In responding to an RFP, one should carefully follow the guidelines set by the agency. The guidelines include the boundaries of the problem and provide general suggestions for problem solution. An RFP is followed by a proposal which, if funded, results in a contract with the funding agency. The response to the RFP should address the guidelines, and if the competition is great, the proposal should include some unique feature or approach to the problem, or its solution, that makes the proposal stand out from all the others.

When submitting an unsolicited proposal, one is responsible for identifying the problem and a creative or innovative way to solve it. Some agencies no longer accept unsolicited proposals; most agencies at the state level still do.

With the increased emphasis on accountability, proposals are scrutinized for potential payoff. (See, for example, the report of the National Research Council, 1976.) The Education Amendments of 1976 (sections 131 and 133) further require reasonable expectations that contracts result in improved teaching techniques or curricular materials that will be used in a substantial number of classrooms or other learning situations within five years. Objective measures of impact are a critical component of the proposal. Another change (sections 132 and 133) is that funds are now funneled through RCUs. The RCUs are tending to award fewer grants because they prefer to award contracts. However, some states are using RFPs.

Funds awarded as a result of proposal writing activities can serve as valuable resources in program planning and development. Consider the provisions for vocational education in the Education Amendments of 1976 (sections 130-136): research results can build the data base necessary for planning decisions; experimental, developmental, and pilot programs can effectively add to the knowledge base for planning decisions; and improved curricular materials can make the task of program planning and development easier. There is a need in vocational education for an expanded data base from which to make planning decisions. Persons directly involved in the daily activities of vocational education are best able to carry out the program development activities and projects needed to build this knowledge base.

Vocational education personnel training program. Another way to look at the problem of competitive resources for planning is to upgrade the skills of the personnel involved. This may be accomplished with financial assistance available through the Education Amendments of 1976 (section 135), which provide for vocational education personnel training. States may use these funds to support programs or projects to improve the qualifications of vocational education personnel. Specific programs and projects must be in agreement with provisions of the state plan for the administration of vocational education. They can be funded through grants or contracts. Again, preparation of a proposal is usually necessary to secure these funds.

Leadership Development Award Program. Professional development of individuals is possible through the Leadership Development Award Program supported by the Education Amendments of 1976 (section 172). As vocational educators take advantage of retraining and upgrading opportunities, the resources available for program planning and development should be increased. Persons desiring to take advantage of the leadership development opportunities available in the federal vocational education legislation must send their application to the U.S. commissioner of education, with copies submitted to the state director of vocational education. The development of leadership skills increases human resources available for planning. Again, the potential participant must prepare papers documenting the ways in which the criteria for the leadership development awards will be met. As vocational educators seek new levels of knowledge and insight by reading, studying, and participating in professional development opportunities, the planning resources available should be increased.

Creating Resources

The most challenging approach to securing resources is that of creating new resources or redirecting existing resources. Many of us in vocational education have not taken an active part in this approach. Some of us are content to sit on the sidelines and criticize the way current resources are being expended. Blame is often attributed to the "state plan" or to "national priorities." Vocational educators need to act more often, rather than simply reacting to what someone else proposes.

Pertinent questions are whether local classroom teachers are submitting creative, innovative curriculum materials to their state liaison representative for sharing with the regional network; whether they are sharing curriculum needs with the state liaison representative so the information can be fed into the annual collection of determined curriculum needs which the U. S. Office of Education uses in selecting its curriculum priorities each year; and whether they are submitting copies of reports or curriculum materials to their state RCU director for distribution through the RCU network, or to the appropriate ERIC Clearinghouse, so they can be shared with other vocational educators.

Vocational educators should be concerned with having the best possible materials. In this regard, there are several basic questions that need to be answered:

1. Do you let your state supervisor know you are willing to serve as a field test teacher? Do you offer to test curriculum materials or new ideas in your classroom and report to the developer how well they did or did not work?

2. Do you provide input from your advisory committees, your students, and your colleagues to the developers of your state plan? Do you react to the state plan? Do you feed data and ideas into the development of the state plan?

3. If there are needs, have you expressed them to persons who can exert an influence on the allocation of resources? What are you doing in redirecting the use of existing resources?

This section has focussed on approaches in securing resources. Three approaches have been described in detail: those resources readily available to vocational educators, those resources available on a competitive basis, and the creation of new resources. The next section gives attention to the allocation of resources once they become available.

Allocation of Available Resources

The allocation of available resources is a very important element of planning for vocational education. A comprehensive plan for vocational education can be conceptualized, but it will not be much better than haphazard decision making unless human, fiscal, and material resources have been properly allocated (Banghart & Trull, 1971). The allocation of all essential resources (information, personnel, facilities, and finances) must be considered. Those persons involved in planning must balance the assignment of personnel, allocation of finances, acquisition and utilization of baseline data, and the availability of essential facilities if comprehensive planning is to be a positive factor in vocational education.

Allocation of Information Resources

Allocation of information resources may not be recognized for its contribution to vocational education and comprehensive planning. The state plan for vocational education and the analysis thereof is one type of information that should be available to all planners for vocational education. In addition, statistical data regarding the labor situation, economic conditions, employment needs, and other substantive information that identifies trends in the world of work are necessary. Some of this information is free simply by asking to be put on certain mailing lists; however, most of it is costly because information gathering and retrieval is an expensive process. Nevertheless, spending funds for information purposes is a wise investment and a necessary factor in securing baseline data for comprehensive planning.

The need for educational data and other relevant information was recognized by Congress when it enacted the Education Amendments of 1976. It was specified that the commissioner and the administrator of the National Center for Educational Statistics (NCES) would jointly develop information for a national vocational education data reporting and accounting system (section 161).

Included in this system will be information on vocational students, programs, program completers and leavers, staff, facilities, and expenditures. Any state receiving assistance under this act will establish a State Occupational Information Coordinating Committee (SOICC) and cooperate in supplying information to the vocational education and occupational information systems.

Also established was the National Occupational Information Coordinating Committee (NOICC). Its purpose, among other things, is to meet common occupational information needs of vocational education programs and comprehensive employment and training programs at the national, state, and local levels. It is expected to work closely with the SOICC in each state.

The information generated through all of these sources should be invaluable in comprehensive planning for vocational education.

Allocation of Personnel Resources

Because personnel represent a large percentage of the resources needed for comprehensive planning, the allocation of personnel resources should be carefully planned. The state plan for vocational education and/or the official certification requirements in each state designate the credentials which individuals in specific positions must possess. These criteria for personnel qualifications must not be minimized. Every effort should be made to exceed any minimum requirements. Recruiting highly qualified personnel and upgrading current personnel credentials is one way of ensuring that vocational education will fulfill its intended purpose.

In addition to the allocation of personnel resources, there is also a need for the allocation of essential supporting services. Such supporting services as research and development, a management information system, professional personnel development, vocational guidance and counseling, curriculum development, and continuing program evaluation are needed to constantly reinforce and strengthen the utilization of available personnel resources in carrying out the various planning functions. Thus, it is imperative that adequate fiscal resources be made available to provide personnel resources and supporting services needed to ensure sound comprehensive planning in vocational education on an equitable and affirmative basis.

Allocation of Technical Resources

In addition to information and personnel resources, certain technical resources are needed to utilize fully the information required for effective planning. Facilities such as computer terminals, direct access hardware, electronic equipment, and teletype or wide area telephones are necessary components in the planning process. Unless the appropriate facilities are available for use by the personnel involved in planning vocational education programs, available information may not be effectively utilized in the planning process.

Allocation of Financial Resources

Since adequate financial resources are vital to effective planning, methods suggested for the allocation of federal, state, and local finances need to be carefully examined. It is important to know how these methods relate to accepted approaches to comprehensive planning.

Allocation of federal resources. Criteria used to determine the means by which federal resources are to be appropriated to the states for vocational education are explained in the Education Amendments of 1976 (section 103). After the designated categories are reserved for national priorities, the commissioner of education is authorized to allot to each state for each fiscal year the remaining part of the appropriation based on certain population factors identified in the act and the state's per capita income. The provision of section 103(e) of the act indicates that:

> From the sums allotted to a State under this section . . ., 80 percentum of such sums shall be available to each state for the purpose of carrying out subpart 2 of this part and 20 percentum shall be available for the purpose of carrying out subpart 3 of this part.

In analyzing the formula used to determine each state's entitlement for federal vocational education resources, several assumptions can be made. A state that has a high per capita income and a small population can expect a relatively low appropriation of funds. Conversely, a state with a low per capita income and a large population can expect a proportionally larger share of the available funds. The other states will fit somewhere between these two extremes. However, if the criteria used are weighted appropriately and applied properly as a basis for determining the appropriation for each state, the results should be fairly equitable.

The other aspect of allocating the federal resources pertains to what individual states must do to receive their fair share of the funds. In considering the allocation of resources available for vocational education, it is useful for each state to analyze carefully the different elements of the federal legislation to determine what must be done to qualify for maximum financial support.

Using Resources to Support Planning Functions

In order to participate in programs authorized by the Education Amendments of 1976, the state board for vocational education must submit a general application to the commissioner of education (section 106 [a]). This application must contain assurances that the state will prepare and submit to the commissioner a five-year state plan, an annual program plan, and an annual accountability report. The procedure to be used by the state board to carry out several of the assurances shall be included in the five-year state plan (section 109 [a] [1]).

The state board further agrees, as a part of its five-year state plan and annual program plan (section 106), that funds will be distributed to eligible local educational agencies on the basis of annual applications which have been developed in consultation with the local advisory council on vocational education and representatives of the vocational educational programs and other manpower training resources in the community.

The application will describe the vocational education needs of the potential students to be served, and indicate how and to what extent the proposed program will meet such needs. It will also describe how the activities proposed in the application relate to any manpower programs conducted in the community by the prime sponsor for the Comprehensive Employment and Training Act (CETA) to assure a coordinated approach to meeting the vocational education needs of the community.

The application will also describe the relationship between vocational education programs proposed to be supported with federal funds and other programs which will be supported by state and local funds.

It is expected that the state will, in considering each local application, give priority to those applications which: (a) come from economically depressed areas and areas with high rates of unemployment that are unable to meet the vocational education needs of their populations without federal assistance; (b) propose programs designed to meet new and emerging manpower needs and job opportunities in the area and, where relevant, in the state and nation; and (c) require special consideration relating to the needs for vocational education among the various populations and various areas of the state due to certain economic, social, and demographic factors.

In determining the distribution of the available federal funds to eligible areas of the state, the state will use as the most important criteria: (a) the relative financial ability to provide the resources necessary to meet the needs of vocational education in the area served, (b) the relative number or concentration of low-income families or individuals within the area; (c) the relative financial ability of the eligible recipient to provide the resources necessary to initiate or maintain vocational education programs to meet the needs of its students; and (d) the relative number or concentration of students served whose education imposes higher than average costs, such as handicapped students, students from low-income families, and students from families in which English is not the dominant language.

As shown in Table 13 (*American Vocational Journal,* November 1976,

Table 13

VOCATIONAL EDUCATION ACT OF 1963 AS AMENDED IN 1976 AUTHORIZATIONS FOR VOCATIONAL EDUCATION UNDER TITLE II

Program	FY 78	FY 79	FY 80	FY 81	FY 82
Basic State Grants	$ 704,000,000	$ 824,000,000	$ 944,000,000	$1,060,000,000	$1,188,000,000
Sex Bias Monitoring Personnel ($50,000 per state)					
Work-Study					
Cooperative Education					
Energy Education					
Residential Schools					
Program Improvements and Supportive Services	176,000,000	206,000,000	236,000,000	265,000,000	297,000,000
Research					
Exemplary and Innovative Curriculum Development					
Guidance and Counseling					
Preservice and Inservice Training					
Grants to Reduce Sex Bias					
State Planning Grants	25,000,000	25,000,000	25,000,000	25,000,000	
Special Disadvantaged	35,000,000	40,000,000	45,000,000	50,000,000	50,000,000
Consumer and Homemaking	55,000,000	65,000,000	75,000,000	80,000,000	80,000,000
Bilingual Training	60,000,000	70,000,000	80,000,000	90,000,000	80,000,000
Renovation and Remodeling (Urban and Rural)	25,000,000	50,000,000	75,000,000	100,000,000	
State Advisory Councils	8,000,000	8,500,000	9,000,000	10,000,000	8,000,000
National Advisory Council	450,000	475,000	500,000	500,000	500,000
Totals	$1,088,450,000	$1,288,975,000	$1,489,500,000	$1,680,500,000	$1,703,500,000

p. 34), the basic state grants authorized in the Education Amendments of 1976, which extend through 1982, were very favorable for the improvement and expansion of vocational education. However, only about 60 percent of the authorized amount was actually appropriated by the Congress for fiscal years 1978 and 1979 (*AVA Member-gram*, Summer 1977). Also, about 60 percent of the appropriated funds were set aside for categorical funding.

In analyzing the information, it is evident that these funds are intended to support a broad range of significant categories. Under the basic state grants (subpart 2) resources can be used to support regular vocational education programs, work-study programs, cooperative vocational education programs, energy education programs, special programs and placement services, and a number of other activities.

Flexibility and adaptability are necessary attributes for successful allocation of available resources to serve the intended outcomes of planning (Morphet, Jesser & Ludka, 1972). When a state engages in planning, it should be able to select programs, services, and activities that are relevant to its particular needs. In analyzing the provisions of the Education Amendments of 1976 regarding the possibilities for effective planning, Burkett (November 1976) said:

> We are living in a period of disenchantment with education—on the part of students, parents and taxpayers. People are looking to vocational education not only as a means of improving the nation's productivity, but as a cure for many of society's ills. Vocational education is seen as a way to instill a more realistic purpose in our educational system. . . . The many set asides and special funding categories in the new legislation are a symptom of failure to provide vocational education for these special groups in our population. . . .
>
> So now we have something of a paradox. On the one hand, Congress is calling on the states and local school districts to do comprehensive planning to meet the needs of all the people in every community and, on the other hand, Congress proceeds to tell the states and local communities how much vocational education every special group should have.
>
> After all the set asides are accounted for and the categorical funds are earmarked for special purposes, there will be little opportunity for real planning. This dichotomy in congressional intent is difficult to reconcile unless one keeps in mind the fact that the major purpose of federal funding is to satisfy certain unmet needs (p. 11).

Burkett's observations lead to an important conclusion. Effective planning for vocational education must give adequate attention to the special needs groups and the unmet needs of all other people in every community. Alternative programs, services, and activities must be identified and analyzed carefully if the outcomes of planning are to be satisfactory. Methods of allocating available resources must allow for and encourage alternative approaches in planning for vocational education.

The Education Amendments of 1976, then, give vocational education many opportunities to expand and improve program offerings. Although the legislation is somewhat inadequate in its support of comprehensive planning, it is a start toward the development of a better system for assuring more effective use of all available resources. With a sustained effort, success can be assured. Such an effort would undoubtedly dictate more flexibility for allocating financial resources in future federal legislation.

Allocation of state resources. State agencies allocate two types of resources—federal and state funds. Federal resources are allocated on the basis of U.S. Office of Education guidelines, while state resources are authorized on the basis of laws or policies enacted by the state.

1. *Distributing federal funds.* As previously stated, the allocation of federal resources by the state board to eligible local educational agencies is based on specific criteria and an annual application. The annual application is basically a local program plan for vocational education. It must be developed on the basis of the provisions of the five-year state plan and the annual program plan. When the local application is approved by the official state agency, then that part of the application which conforms to the provision of the federal legislation may be eligible for federal financial support.

The question is, how much of the basic state grant—budgeted to support vocational education programs, services, and activities in local school districts—is a given local school district entitled to receive? Each state is expected to develop some kind of formula or rating scale that will enable it to apply the criteria identified in the federal legislation to make an equitable distribution of the federal resources to eligible local recipients.

An example of how these criteria are applied in the distribution of the basic state grant (subpart 2) to eligible local school districts is shown in Figure 5. This is a mathematical formula used by the state of Kentucky (Kentucky State Plan, 1978). It is used to determine the apportionment factors for support of the regular vocational education programs, programs for the disadvantaged, and programs for the handicapped. An apportionment factor is a percentage of the total amount of funds budgeted to support the particular program category that is under consideration. The combined apportionment factors for all eligible local school districts in the state should equal 100 percent. If a given local school district's approved application does not require the amount of funds the district is entitled to get, there are two possible alternatives. The local school district can request a revision of its application and an expansion of its program to meet certain unmet needs, or the unused entitlement will be redistributed to the other local school districts that have approved applications with budgets in excess of their entitlements. The redistribution to eligible recipients would be done by repeating the initial procedure.

As shown in Figure 5, the formula uses a predetermined weighting factor of 5 to control the impact of factor 3 in relation to factors 1 and 2, and a predetermined weighting factor of 10 to control the impact of factor

Figure 5

FORMULA FOR COMPUTING REGULAR VOCATIONAL EDUCATION ENTITLEMENTS OF LOCAL SCHOOL DISTRICTS IN KENTUCKY FOR SUBPART 2 (P.L. 94-482) VOCATIONAL EDUCATION FUNDS

$$\begin{array}{c}\textbf{Factor 1}\\ \left(\begin{array}{c}\text{District Measure of}\\ \text{Manpower Needs \&}\\ \text{Job Opportunities}\end{array}\right)\end{array} + \begin{array}{c}\textbf{Factor 2}\\ \left(\begin{array}{c}\text{District Measure}\\ \text{of Low-}\\ \text{Income Families}\end{array}\right)\end{array} + \left(\frac{(\text{Factor 1} + \text{Factor 2})\ \begin{array}{c}\textbf{Factor 3}\\ \left(\begin{array}{c}\text{District Measure of}\\ \text{Relative Ability to}\\ \text{Provide Resources}\end{array}\right)\end{array}}{5}\right)$$

$$+ \left(\frac{(\text{Factor 1} + \text{Factor 2})\ \begin{array}{c}\textbf{Factor 4}\\ \left(\begin{array}{c}\text{District Measure of}\\ \text{Relative Cost of Programs,}\\ \text{Services, and Activities}\end{array}\right)\end{array}}{10}\right) = \left(\begin{array}{c}\text{Combined Apportionment}\\ \text{Factor for an Eligible}\\ \text{Local School District}\end{array}\right)$$

4 in relation to factors 1 and 2. Constant 5 and constant 10 are examples of how weighted constants can be used to regulate the impact of certain factors in a formula designed to allocate resources to local education agencies. In determining the relative costs of programs, the vocational education needs of the people and the manpower needs of the labor market are taken into account.

This formula produces an apportionment factor for a local school district which is a ratio between the local school district's combined weighted factor and the total for all districts in the state. This percentage figure represents the proportion of subpart 2 funds that the local school district is entitled to receive if an acceptable local plan is developed and an approvable application is submitted.

The formulas for the distribution of disadvantaged and handicapped funds are similar to the formula for the distribution of regular program funds, except the disadvantaged formula uses a district measure for disadvantaged persons needs to replace factor 2 and the handicapped formula uses a district measure for handicapped persons needs to replace factor 2.

The factors and weighted constants used in the formula shown in Figure 5 seem to be reasonable in terms of the goals and objectives of vocational education. There is some indication, however, that data needed to accurately describe each factor in the formula for every local school district in the state are difficult to collect (Lee, 1976); and they are equally hard to apply (Young, Clive, & Miles, 1972).

It is evident that the ability of a state to use the suggested mathematical formula, or any other appropriate rating scale, in determining the apportionment factor for each eligible local recipient to be used in the distribution of available federal financial resources depends upon the accessibility of an adequate information base.

With the emphasis of the Education Amendments of 1976 on expanding and improving data collection systems at the national, state, and local levels, this situation should improve. Better data support at all educational levels should result in new definitions and delimitations of the methods used for the allocation of financial resources, along with more realistic information about relevant relationships (Eidell & Nagle, 1970). This will enable states to be more efficient in planning, as well as to justify why and how certain data are used in the resource allocation process.

2. *Distributing state funds*. In most states, methods of allocating available state resources to local educational agencies are the same for both vocational and general education. These methods range from grants based on head count and average daily attendance to cost sharing based on operating costs. Some states allot funds according to other indices, including statewide salary schedules, grants based on full-time equivalents, and various other expenses. A few states use special formulas that reimburse local educational agencies for costs incurred which exceed approved budgets. There are many other methods that should be explored.

Using Resources to Support Planning Functions

The most effective methods for the allocation of state funds are based on criteria which require the state or district to assess its manpower needs and job opportunities, vocational education needs, ability to provide resources, relative costs of programs, services, and activities, and so on.

Most of the methods which are commonly used to allocate state resources have a weak relationship to the purposes of vocational education. Using student numbers does not indicate academic or career needs. Likewise, population counts are not reflective of labor market shortages. Costs of maintaining programs do not give a true picture of the training that is most urgently needed (Young, Clive, & Miles, 1972). It may be said that these methods have contributed to the growth of vocational education and yet, in the context of comprehensive planning, they most likely will prove inadequate.

Changes that are responsive to real planning needs and the intents of state and federal legislation and that encourage and support comprehensive planning must be considered. Changes based on the previously mentioned criteria will ensure more responsive planning for vocational education. However, one question that has not been answered is what changes in allocating resources will most likely enhance planning as a means of altering the purpose, goals, and objectives of vocational education. This question will lead to many challenges for state agencies. The method for allocating resources in every state must be continuously evaluated to ensure that it is flexible, adaptive, and supportive of planning for vocational education (Morphet, Jesser, & Ludka, 1972).

From their evaluations, many states will have to make adjustments. Some state agencies will need to design and implement a new allocation method and engage in concentrated efforts to sell the desired changes to legislators, other educators, and the general public. Comprehensive planning requires that all state agencies which are responsible for vocational education have a strong commitment to planning, evaluation, and change (Brewin & Sisson, 1971). The future of vocational education may depend on the willingness of educators to become involved and take appropriate action in support of planning.

Use of local resources. Use of resources available at the local level is a procedure that varies from school district to school district, depending on particular administrative philosophies. Historically, resource allocation activities have been an informal process of spending funds to derive immediate benefits (Tusher, 1974). With the onset of comprehensive planning, changes are inevitable. Methods of allocating resources must change to promote cost-effectiveness in a systematic, long-range approach to planning.

As comprehensive planning develops, it can be expected that more effective ways to fund existing programs will be designed and implemented (Schiefelbein, 1975). A major change must be an increased focus on planning goals and objectives. Programs need to be funded on the basis of success in meeting goals and objectives rather than on criteria such as available funds (Dusseldorp, Richardson, & Foley, 1971). One way this can be accomplished is to provide the funding necessary to meet specified goals (McMahon, 1972). For example, if a goal pertains to numbers of graduates who find employment in related occupations, resources could be allocated according to a ratio reflecting the numbers satisfactorily employed in comparison to the numbers that graduated. The more successful a program, the more funds would be allotted for expansion and improvement of that program. A reduction in available resources would indicate that goals were not appropriately met. This suggested method of allocating available resources would have to be perfected through the planning process. However, the point should be crystal clear that new methods for allocating available resources will be developed and tested for the explicit purpose of improving vocational education.

In the future, one can expect changes in methods of funding new programs. This should be a major goal of comprehensive planning for vocational education. Advanced computer techniques and new data collection systems can be expected to play a major role in planning (Hamilton, 1975). In using these tools, emphasis will be divided between present and future conditions that affect a particular vocational education program. In considering present conditions, all aspects of funding should be explored to determine the resources needed for a variety of options (Haggart, 1972).

Long-term conditions should be predicted on the basis of a computerized analysis of future economic, societal, and industrial changes (Dunn, 1976). From the analysis results, which should include information on staffing and financing, short- and long-term studies, and supplies, a program could be selected with the capability to meet both present and future needs. In this regard, resource allocation becomes an investment, a means to obtain equity over a period of time (Correa, 1975).

Summary

The implications of the allocation of available resources at the federal, state, and local levels are many. The Education Amendments of 1976 require vocational educators to fully analyze and use all available training opportunities to conserve available resources. This mandate can be expected to cause a significant change in how resources are allocated for all aspects of vocational education. Allocation of available resources for programs and facilities could be maximized by using supportive funding for shared facilities, tuition vouchers, industry-education, teaching exchanges, adjunct teachers, travel, and other innovative activities. Through comprehensive planning, the thrust to conserve resources and bring about improvements in funding new and existing programs will influence leaders in vocational education as they attempt to allocate available resources.

The possible choices of vocational education programs and services to meet the training needs of people are many. Leaders in vocational education will be limited in their efforts to do an effective job of comprehensive planning for vocational education only by the expertise of the personnel involved and their creativity, imagination, and desires to carry out the intent of the planning process.

A natural component in the allocation of resources is the management of those resources for effective results. The last section of this chapter emphasizes the management aspect.

Management of Resources for Effective Results

There is *no* formula, legislation, or bag of tricks for the management of resources in order to achieve effective results from comprehensive planning for vocational education. Sophisticated technology may be available to enhance the process; yet human elements are the primary foci in the process.

We have explored what resources are needed to support planning functions; what approaches are needed in securing essential resources; and how to allocate available resources. The difficult lesson to master is how to manage these resources effectively when they become available. To suggest appropriate methods for accomplishing this goal, we should first review some fundamentals.

What Is Management?

Numerous definitions of the management process exist. Not all writers agree on terminology or the exact sequential nature of the process. Basically, *management* is a means of controlling change through the use of resources to achieve goals (Nickell, Rice, & Tucker, 1976). A rational management process may be defined as one in which all management behavior is demonstrably related to the attainment of specified goals (Conroy, 1971).

Whether one is managing a family, a business, an educational institution, a governmental agency, or a large industry, several basic functions are germane to the process of management. These are: (a) planning, (b) organizing, (c) implementing (which includes staffing, directing, controlling), and (d) evaluating.

Planning. To be successful, planning for educational institutions must be a group process. Before plans can be developed, values, goals, and standards must be clarified. Then the planning process is carried out as described throughout this book.

Organizing. Organization is the logical arrangement of activities within a plan. For example, a plan to conduct a statewide workshop on needs of unemployed youth might never get off the ground without some logical organization. This seems to be the appropriate time for: (a) delegating authority, (b) using experienced professionals as consultants, (c) dividing responsibilities, (d) scheduling, and (e) synchronizing activities (Nickell et al., 1976).

In most educational settings, a person-centered style of organization will result in better performance and higher motivation than simply a product- or task-centered style of organization. This is not to minimize established standards, but to emphasize that people usually are concerned about meeting most of their lower-level needs (Maslow, 1954), such as the physiological ones for shelter and food, before they are able to divert their attention to the social needs of any group. Another way of approaching humanistic management was postulated by McGregor (1960) in his explanation of theory X and theory Y, i.e., management by directives or management by participation. He hypothesizes that for theory Y, it is the responsibility of management personnel to create a climate where people can develop the organization and still achieve their own goals. Meeting all of these needs within an organization should help both the individuals and the group achieve their most important objectives.

Implementing. Implementing is another part of the action stage of management. In a group situation, this naturally involves many persons—some in a supervisory role. During the implementation stage, it is helpful if those involved observe and assess the process. Often changes are necessary in order to reach the goals. A simple analogy is a person traveling by automobile in a new territory. He or she looks for reinforcement through reading road signs, checking the map, and looking for service stations. If this is not done, some serious errors might occur.

Aspects of implementation to consider include staffing, directing, and controlling. In staffing, one should consider the qualifications of the candidate and the inservice requirements necessary for that staff member to achieve the maximum of his or her potential. Then there should be a clear description of expectations plus the actual performance expected in the specified task. Feedback by way of observations, conferences, and oral and written assessments by the staff member and other appropriate persons should then give direction to further staffing needs.

Directing and controlling are both action oriented, involving lists of tasks to be performed, responsibilities of personnel (perhaps with job descriptions), and a system for accomplishing the activities. Program Review and Evaluation Technique (PERT) or other systems approaches will provide an excellent aid to positive directing in the implementation stage. Several systems are described in Chapter 9.

In the implementation of the plan of the organization, changes may be necessary either because of unsatisfactory results or outside pressures which cause reassessments. The flow from action to evaluation to change and back to another action produces a cycle.

MacKenzie (1969) saw the management process as a similar cycle with many interrelated functions. In his opinion, analyzing problems, making decisions, and communicating the results are the three prime functions in management.

Evaluating. Evaluating is a function familiar to vocational educators and others concerned with the educational process. The more measurable the goals, the more accurate evaluation can be. Evaluation requires analysis, objectivity, honesty, and a sound basis for judgment (Nickell et al., 1976). Chapter 10 deals in depth with evaluation in vocational education. Suffice it to say here that it is a critical part of the management cycle.

According to Coombs (1972), costs must be juxtaposed with educational objectives, outputs, and ultimate benefits to intelligently assess performance and make rational choices among alternative methods to improve education. This is what evaluation is all about.

Many writers advocate a systems approach in managing resources for education. For example, Coombs (1972) suggests using a systems approach from the outset as a means of reaching educational objectives. His order of priorities is to: (a) clarify objectives, (b) consult the major clients at the outset, (c) find able collaborators, and (d) get the minimum number of necessary facts.

One way to depict the management cycle is as a wheel. One such conceptualization is found in Figure 6.

In the center of this construct of management is the decision-making process. The spokes from the center to the perimeter contain many resources which may or may not be utilized in the different management stages. The management process cannot be viewed independently of resources and decisions related to the resources. What then are the resources?

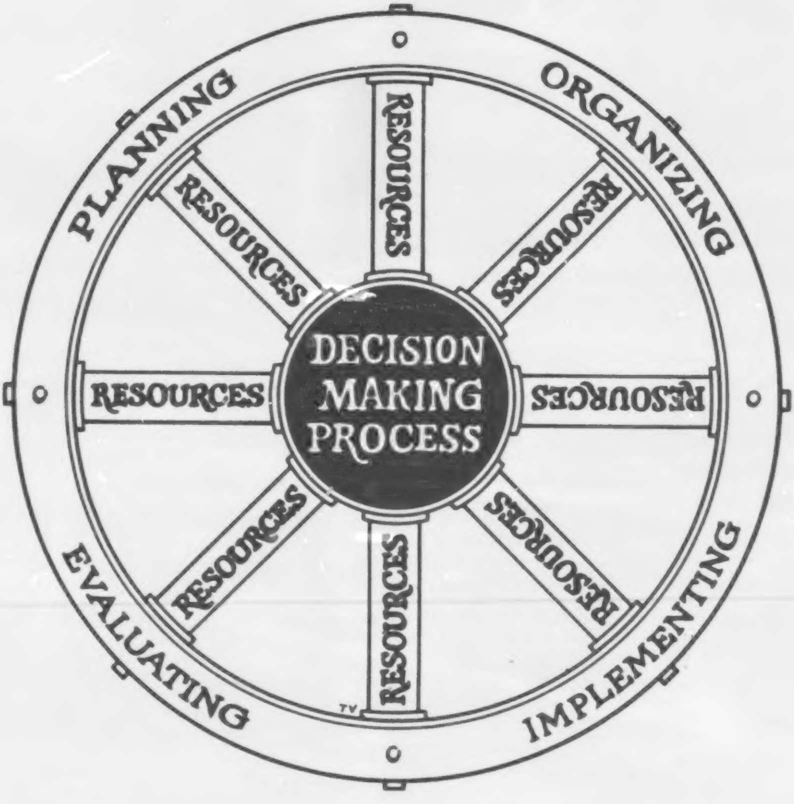
What Resources Are to Be Managed?

Many people have been conditioned to think of resources mainly in terms of money. However, resources are *all* the assets which may be used to attain goals (Nickell et al., 1976). They may be classified as human and nonhuman. Human resources exist within people and consist of a person's potential abilities as well as current attributes; these resources include energy, knowledge, education, talents, attitudes, skills, and any other characteristics which require cognitive, affective, or psychomotor abilities.

Nonhuman resources are usually more visible, and one is likely to be acutely aware of the lack of their existence. They include such items as goods and properties in the community or environment. Time may be considered either a human or a nonhuman resource. There are many taxonomies for classifying resources; the system just described is simplistic and can serve the purpose at hand. A long list of examples could be developed for any or all of these resource categories. The abundance of resources to which we have access might amaze the reader. Resources for educators, contrary to popular belief, are extensive.

Nickell et al. (1976) identify four universal characteristics of resources: (a) utility in goal satisfaction, (b) accessibility to the user, (c) interchangeability, and (d) manageability. Some characteristics of management which depend on specific personal or human resources are intelligence, judgment, adaptability, enthusiasm, initiative, inner drive, goal orientation,

Figure 6
THE MANAGEMENT CYCLE


PLANNING
ORGANIZING
IMPLEMENTING
EVALUATING
RESOURCES
RESOURCES
RESOURCES
RESOURCES
RESOURCES
RESOURCES
RESOURCES
RESOURCES
DECISION MAKING PROCESS

perseverance, communicativeness, efficient work habits, and commitment (Nickell et al., 1976). In addition, there are some resources which can be developed or learned, such as creativity, friendliness, and compassion.

Human resources can be improved, strengthened, or increased with use. However, they must be used. Most individuals utilize only part of their resources. Although the management of human capital is possible, it requires time, commitment, and understanding of basic psychology on the part of the manager. For example, inservice education can be a wise use of time and money.

In managing human resources, an individual or a group might apply these concepts (Nickell et al., 1976):

1. Choose resources to attain goals (one would choose a competent mechanic to keep expensive machinery in top working order).
2. Invest resources economically (e.g., is it reasonable for the administrator to spend extensive time learning typing skills?).
3. Consider alternative uses of resources (often exchanging nonhuman for human resources, such as duplicating copies of letters rather than retyping them).
4. Balance resource choices (persons with experience and patience may work with the new learner).
5. Combine group resources (multidisciplinary groups in vocational education may bring a refreshing solution to a problem which a single service area may miss).

What are some other nonhuman resources? Some are: money income, fringe benefits, vacations, retirement programs, and credit (cash loans, service credits, charge accounts, and sales credits). In addition, wealth (real property, income-producing assets, equipment, furnishings), technology, and environmental resources are often overlooked as resources. Natural resources such as soil, minerals and air are important environmental resources. Then there are organizations (civic, community, state, national, educational) as well as economic resources (stores, factories, shopping centers, stock markets, and airlines).

Other resources include police and firemen, parks, libraries, etc. This list is almost endless. Though many resources are available for use in reaching goals, management must often seek them out.

In most educational settings (public schools, vocational schools, junior colleges, higher education institutions, private institutions) resources will be: (a) budget dollar figures for personnel salaries, current expenses, program expenses, and operating and maintenance costs, (b) buildings and facilities, (c) equipment and vehicles, (d) services (such as a computer center), (e) space, and (f) human resources with all degrees of talents, skills, and experiences. Personnel costs dominate educational costs, as education is a labor-intensive industry with a highly human resource input (Coombs, 1972).

The persons responsible for planning the management of resources must weigh the available resources against: competing needs, priorities, justification of wants, goals (current and long-range), attitudes, competencies, demand for goods and services, enrollments, and commitment to society. Usually the higher the level of education (from elementary through graduate education), the greater the costs. Generation of alternatives is also essential. This may mean looking at resources in a new way or finding new uses for traditional educational assets. Then the decision-making process is drafted by the planner to most effectively attain the desired results.

What Are the Desired Results?

The desired results will depend primarily upon the nature of the organization. What are its priorities—serving people, making profits, reaching educational objectives, succeeding in public relations, carrying out research functions, providing training opportunities, transmitting humanitarian or spiritual values, a combination of any of the above, or something else?

For a vocational school, the desired results might be a high percentage of graduates with jobs in the area of training and successful advancements within a specified time. In an institution of higher education, the results would be somewhat similar, but of equal importance would be the rate of attrition—students staying in chosen majors until graduation and maintaining grades and competencies to enable graduation.

For a secondary school caught in the squeeze of inflation, rising costs and declining effectiveness might contribute to dropouts, repeaters, or persons graduating with a lack of real skills or purpose. Certainly, a desired result would be to reverse this situation. Other educational institutions want their products, as a result of their matriculation, to be accepted into certain schools or careers requiring higher learning, e.g., law or medical schools.

At any rate, the results must be clearly delineated; otherwise, how will we know when we have attained them? In a vocational-technical school setting, a desired result is not only the proper finished product (i.e., the student), but a satisfied, professionally competent faculty who help recruit and attract other qualified faculty and students. Without adequate resources and the best use of all types of resources, this is impossible. Therefore, it becomes critical to the survival of one's program and institution to make those decisions carefully and wisely.

Nothing has been mentioned about economic conditions of society or restraints such as zero-based budgeting, the steady state fiscal concept, inflation or depression situations. In conditions such as those which have existed since the early 1970s, resources are becoming scarce. Therefore, management must learn not only to be effective, but efficient, competitive, and accountable. Any educational endeavor involves not only economics but also pedagogy, sociology, psychology, and perhaps politics (Coombs & Hallak, 1972).

Using Resources to Support Planning Functions

Summary

Educational institutions are not profit-making organizations, and people are not machines. We are still committed to the concept of the value of the individual. However, the expectation that we be accountable for the resources used to achieve specific results is a realistic and reasonable one. In vocational education, the expectation is even stronger. Accountability is built into the structure itself, and future funding of resources needed for comprehensive planning is directly related to how successful we have been in planning, organizing, implementing, and evaluating vocational education at all levels.

References Cited

AVA Member-gram. Washington, D. C.: American Vocational Association, Summer 1977.

Banghart, F. W., and Trull, A., Jr. *Educational planning*. New York: Harcourt Brace Jovanovich, 1971.

Brewin, E. C., and Sisson, R. L. A systems approach to planned growth. *Planned change in education*. New York: Harcourt Brace Jovanovich, 1971.

Burkett, L. A. (Ed.). Latest word from Washington. *American Vocational Journal 51*(8), November 1976.

Burkett, L. A. (Ed.). Provisions in the new vocational education amendments. *American Vocational Journal 51*(8), November 1976.

Commonwealth of Kentucky. *Kentucky state plan for vocational education*. Frankfort, Ky.: State Department of Education, 1978-1982.

Commonwealth of Kentucky. *Kentucky state plan for vocational education*. Frankfort, Ky.: State Department of Education, 1976.

Conroy, W. G., Jr. *An integrated state and local management and information system for occupational education in Massachusetts*. Boston: Massachusetts Department of Education, 1971.

Coombs, P. H., and Hallak, Jr. *Managing educational costs*. New York: Oxford University Press, 1972.

Correa, H. (Ed.). Introduction: A survey of models in education and educational planning and administration. *Analytical models in educational planning and administration*. New York: David McKay, 1975.

Dunham, D. B. A planning process to make vocational education more responsive to real needs. *American Vocational Journal 52*, 1977.

Dunham, D. B., and Price, D. E. *A language for planning and hierarchy of terms*. Salem: Oregon Department of Education, 1973.

Dunn, J. A. (Proj. Dir.). *Fiscal management of vocational education programs*. Palo Alto, Calif.: American Institute for Research, 1976.

Dusseldorp, R. A., Van Richardson, D. E., and Foley, W. J. *Educational decision making through operations research*. Boston: Allyn & Bacon, 1971.

Eidell, T. L., and Nagle, J. M. *PPBS and data based educational planning*. National School Development Council, 1970.

Haggart, S. A. (Ed.). *Program budgeting for school district planning*. Englewood Cliffs, N.J.: Educational Technology Publications, 1972.

Hamilton, N. K. *New techniques for effective school administration.* West Nyack, N.Y.: Parker Publishing Company, 1975.

Hansson, K. Planning change. Morphet, E. L., and Jesser, D. L. (Eds.). *Cooperative planning for education in 1980.* Denver, Colo.: Conference of State Representatives, January 1968.

Howsam, R. *Problems, procedures, priorities.* Morphet, E. L., and Jesser, D. L. (Eds.). *Cooperative planning for education in 1980.* Denver, Colo.: Conference of State Representatives, January 1968.

Krathwohl, D. R. *How to prepare a research proposal* (2nd ed.). Syracuse, N.Y.: Syracuse University Bookstore, 1977.

Lee, A. M. (Proj. Dir.). *Learning a living across the nation.* Project Baseline National Report no. 5. Flagstaff, Ariz.: Northern Arizona University, 1976.

MacKenzie, R. The management process in 3-D. *Harvard business review,* Nov.-Dec. 1969.

Maslow, A. H. *Motivation and personality.* New York: Harper Row, 2nd ed., 1970, p. 259.

McGregor, D. M. *The human side of the enterprise.* New York: McGraw-Hill, 1960.

McMahon, G. G. *Curriculum development in trade and industrial and technical education.* Columbus: Charles E. Merrill, 1972.

Morphet, E. L., Jesser, D. L., and Ludka, A. P. *Planning and providing for excellence for education.* New York: Citation Press, 1972.

National Advisory Council on Vocational Education. Report, 1970.

National Institute of Education. *Catalog of NIE educational products* (2 vols). Washington, D.C.: 1975.

National Institute of Education. *Institutional profiles of education laboratories and R & D centers.* Washington, D.C.: 1976.

National Research Council. *Assessing vocational education research and development.* Washington, D.C.: National Academy of Sciences, 1976.

Nickell, P., Rice, A. S., and Tucker, S. P. *Management in family living.* New York: John Wiley & Sons, 1976.

Reinhart, B. Lack of data: Planning and evaluation bottleneck. *American Vocational Journal 46*(3), March 1971.

Schiefelbein, E. An approach to introducing quality in educational models. *Analytical models in educational planning and administration.* Correa, H. (Ed.). New York: David McKay, 1975.

Tusher, L. J. Cost utility analysis for program evaluation and resource allocation. *Journal of the International Society of Educational Planners 1*(1), May 1974.

White, V. P. *Grants: How to find out about them and what to do next.* New York: Plenum Press, 1975.

Woodruff, A. *State and local responsibilities for planning occupational education.* New York: Educational Facilities Laboratories, 1976.

Wright, L. O. *Developing comprehensive planning capability in state education agencies.* Fruse, B. J. (Ed.). Salt Lake City Utah: Utah State Board of Education, 1969.

Young, R. C., Clive, W. V., and Miles, B. E. *Vocational education planning: Manpower, priorities and dollars.* Columbus, Ohio: The Center for Vocational Education, 1972.

CHAPTER 6

THE HUMAN ELEMENT IN COMPREHENSIVE PLANNING

Daniel B. Dunham, Barbara Lett Simmons,
Benjamin C. Whitten, Paul J. Harris and Don K. Gentry

The purpose of this chapter is to assist vocational education planners in organizing all their resources for more effective and comprehensive planning. A top priority in the Education Amendments of 1976 (P. L. 94-482) is to improve planning in the use of all resources available to states for vocational education and manpower training.

Some important aspects of improved planning are increased staff involvement in planning; greater participation of advisory groups, including public and private agencies, special interest groups, and the general public; and close cooperation and coordination in planning activities with other agencies with certain responsibilities for manpower development and vocational training programs.

Vocational education program planning is a continuous process. Ideally, functional state plans are an outgrowth of this process. State plan preparation is no easy task; it involves a logical arrangement of materials and content and the effective use of individuals and organizations. The entire staff should be involved in a meaningful way. Assigning the tasks to be performed and directing the work of the staff will be discussed in this chapter.

In formulating a five-year state plan, an annual program plan, and an annual accountability report, a state board for vocational education must actively involve a state plan committee. The composition and responsibilities of this committee will also be discussed.

In developing the five-year state plan, the annual program plan, and the annual accountability report with the state plan committee, procedural requirements are the same except for the number of required meetings. The responsibilities of the state board representatives, who must prepare the state plans and accountability report—including working with the state plan committee, state advisory council on vocational education, local advisory councils, and other special interest groups—will also be discussed. The information and suggested procedures contained here should prove beneficial to those who have responsibility for developing and maintaining a systematic approach to comprehensive planning in vocational education at all levels.

Staff Involvement in Planning

The Need for Staff Involvement

The professional vocational education staff is frequently criticized for its "turfmanship." Yet this group is essential to success in planning.

Who needs to be involved? Professional vocational educators are found in a wide variety of occupations and at all levels—community, local school, region, state, and national. They vary in attitudes, ability, competence, commitment, and experience. The local teacher is the most critical: as practitioner, as advocate, as evaluator, and most importantly, as planner. Essential, too, is the involvement of the state level vocational education staff specialist, administrator, supervisor, coordinator, and consultant.

Professional staff members of other related agencies and groups who are indirectly related to and supportive of vocational-technical education must also be involved in the planning process. This category includes the staffs of advisory councils and committees, Comprehensive Employment and Training Act (CETA) units within a state, apprenticeship councils, private vocational schools, industrial training programs, and representatives of the postsecondary and higher education institutions.

Expanding role for interested individuals and groups. While professional vocational education staffs have historically been the key people in planning for vocational education's expansion and improvement, the future will call for even more such participation and for increasingly sophisticated procedures and methods. At the same time, professional vocational education staffs will have to improve their capacity to accommodate the involvement of an ever-expanding number of interested individuals and groups who have previously been excluded from any real involvement in vocational education planning.

Planning is too important to leave to the professional planner alone (to paraphrase an old saying about education and educators)! Yet the professional staff member is still the most important person in the planning process. Without her or him, the whole process, with all of its openness and involvement of new groups and willing "outsiders," stands little chance of being translated into an effective program of vocational education.

Staff Selection and Participation

Selection of the professional staff member. Of the professional staff identified earlier, those who teach or administer at the local level and those who provide supportive services and consultation at a state and/or regional level are the most numerous, often most accessible, and historically the most experienced in generating a good plan for vocational education. Their individual and collective experience as practitioners of vocational education is extremely valuable in planning, but it can also limit perspective. Input from related individuals and groups is often necessary to broaden that perspective so that staff practice can be updated to meet changing instructional needs.

Planning coordinators should give attention to the range of professional staff selected for involvement in plan development. A variety of occupational areas should be represented in the planning group, with a balance of age, years of teaching or administrative experience, males and females, and minorities. Teachers who are proven practitioners and who possess a known capacity for innovation, creativity, and thoroughness should participate. A concern about evaluation and accountability in the classroom is another useful attribute of teacher members of a planning team.

Selection of state-level staff should follow many of the same criteria. The major danger in state-level planning is overloading a planning team with state staff. Often there are several specialists, consultants, or supervisors for each occupational area. If the planning group is to be broad-based, careful selection among those available and interested should result in an equitable number of state staff personnel, kept in balance by equitable numbers of local representatives and delegates from related agencies and groups.

Those charged with selecting staff representatives for the planning groups should establish criteria which include the items enumerated above (age, sex, minority representation, specialty areas of instruction or management, length and type of experience, and level of position represented). The following types of staff should be considered:

1. Persons familiar with fiscal procedures
2. Evaluation personnel
3. Data and statistical professionals
4. Research and development personnel
5. Top-level administration representatives
6. Physical facilities specialists
7. Public relations/information specialists
8. School-based community resource personnel
9. Curriculum development specialists
10. Personnel development consultants or specialists
11. Staff who work with disadvantaged, handicapped, and sex fairness programs
12. Other staff members who represent new or special areas of concern in vocational education

Finally, considerable attention should be given to the careful selection of professionals from related educational areas both at the state and local levels. Included might be staff representing special education, vocational rehabilitation, general education, compensatory programs for disadvantaged students, library services, instructional technology, certification and accreditation, and others who can make needed input while personally and professionally profiting from the planning experience in the vocational education setting.

Selecting representatives from related agencies and groups. As noted in the introductory section, staff representatives from related agencies and groups outside the regular education system need to be included in the planning process. Depending on the planning level, the following agencies and groups could be selected:

1. CETA prime sponsors
2. State or local manpower services council
3. State or local apprenticeship council
4. State or local agency for economic and community development
5. State or local agency for human resources
6. State or local commission for women
7. State or local advisory council for vocational education
8. State or local agency for higher education
9. State or local agency for community colleges
10. State or local professional vocational education organization

Equitable representation as a goal. Clearly, the planning group can become very large. A variety of alternative strategies for effectively utilizing all of these people will be discussed later. The size of a planning team or committee may vary with the planning level. A local planning team may not be able to or need to cover as broad a range of groups as suggested here. Still, equitable representation should be a goal.

Reactive versus proactive participation. A primary goal ought to be to produce a plan which will promote action rather than one which simply reacts. Reaction can be minimized in direct proportion to the quantity and quality of personnel making initial input to plan design and development. For too many years, vocational education planners have produced their planning documents from within a narrow frame of reference, with a limited amount of "outside" input. Often, true "insiders"—teachers, for example—have also been considered "outsiders" by planners. The tendency of the person so treated is to react to the plan document—often negatively. Such negative reaction is born out of lack of involvement—more specifically, a lack of *ownership* of pieces of the plan.

While a staff person reviewing a plan may not accept a plan totally, the chances of his or her positive analysis are enhanced if he or she helped generate the plan and thus "owns" a piece of it. The odds for implementation of those parts of a plan generated by a planning participant are likely to be considerably higher than for the "objective" reactor, who reviews from a position of nonownership.

The ownership concept is worth considering. Those who subscribe to the plan can document innumerable cases where owners are better, more efficient and effective implementers. A side benefit is the proactive element; advocacy of the plan with colleagues is the obvious benefit.

Methods and Strategies for Staff Involvement

Once selection of the planning team or group is completed, plan coordinators need to take a number of steps to assure that the most effective use will be made of the time and talents of those who will collaborate in plan design and development.

Orientation and briefing. For staff members who have not been involved in formal planning situations, it is necessary that orientation to the planning process precede actual plan design and development. Participant effectiveness is often directly related to an understanding of timeliness; number of planning sessions projected; requirements of various laws, rules, and regulations; a calendar of meeting dates; fiscal parameters; results of previous plan implementation; and a host of other related pieces of information without which the prospective planner is less than comfortable as a full-fledged participant. It is important to discuss the reasons for inviting participation. How often have we heard the statement, "I'm really glad to be asked to be here, but I'm not sure why I was selected or what is expected of me"? It is the responsibility of the planning coordinator to assure that such questions are answered—clearly and precisely—very early in the process.

Participants want to know how much of their time will be required, what resource information they should review, and what they will gain personally and professionally from their efforts. They should be provided with summaries of previous plans, plan outcomes, and essential data and information needed to participate effectively in the planning process. Orientation sessions should have a well-planned agenda and be conducted by experienced, knowledgeable personnel who present information and data in a nonbiased manner.

Never should it be assumed that everyone knows fully what is expected of her or him, or what the methods, procedures, time requirements, or technical processes are. Even at the risk of redundancy for some, it is essential that the planning team begin from a base of reasonably common knowledge of these and related elements. Seldom is it a poor investment of time, people, or money to expend effort in briefing the planning group. The dividends paid by these investments will be found in the planning document in clear statements of purposes, goals, objectives, activities, and budgets—with a strong commitment to carry them out.

Using data, information, timeliness, and technologies. Vocational education planners do not lack for data or information to use in plan development. If anything, we are rapidly becoming "data rich," while remaining "planning experience poor." Although the vocational education track record in formal planning is among the best in education, we are still subject to the criticism of plans being too general, lacking clear objectives and measurable outcomes. Most of these weaknesses can be corrected through the improved and proper use of data, information, and technical capacity—and the involvement of more people in the process.

The proper use of data and information is most often directly related to the form in which it is presented. If the form is generalized, the use will be generalized. If the form is, on the other hand, simple, straightforward, and understandable, planners will more often respond in like manner as they use data and information. The planning coordinator must ensure that the technical staff delivers data and information summaries which reflect situations and experience accurately, and which are presented in a form that meets user needs for clarity and understandability. Form of delivery must be in the proposed plan format and reflect the essential elements of law, rules, and regulations. Then the coordinator must assure that the planning team is fully oriented to the nature, meaning, function, and source of data and information.

A planning timeline is essential. Procrastination has no place in the planning process. The tendency to "put off until tomorrow" can infect a planning effort unless critical events are mapped out and the times set for accomplishment of plan development steps are closely followed. The planning coordinator should propose a tentative timeline of critical events at the first planning session. Following planner input, this offering should be modified as necessary, then adopted. It becomes the benchmark of time and data events against which progress is measured. If it is intentionally aborted, compensatory steps must be put in the place of those steps eliminated. Likewise, if variance from the timeline is not intentional, the planning team must adjust its process to assure that final outcome expectations are met.

Such things as illness of a crucial participant, new data or information, or changed rules and regulations will often interrupt the sequence of planned events. Flexibility of process is needed if such occurrences are to be accommodated without totally disrupting the entire effort. Planning team members need to be sensitive to potential disruption, and to the necessity for mid-stream changes in direction.

Planning is not static. It is, as it should be, a dynamic process. Creation of a timeline is not a panacea that will alleviate all problems of process. It must be designed with flexibility in mind if the dynamic nature of planning is to be a capitalizing factor.

There is little we do in the planning process today that does not depend upon the use of technological support. Computer-assisted planning is already practiced in most states. Multimedia resources are available

161

and used by many planners in vocational education. Data and information are easily updated and put in usable form through the use of highly sophisticated technical processes. Planners should depend upon such resources to increase their planning efficiency and effectiveness.

Management information systems are hardly hand-operated in the 1970s. They are, by and large, computer-based systems with a wide range of capability to meet the needs of planners. Beyond the basically simple business of "number-crunching," the computer can produce demographic, statistical, and fiscal data in whatever form the programmer requests it. Profiles, graphs, charts, comparative analysis of costs, cost benefit and efficiency displays, and student data all can be had by designing an effective plan.

Planners need to be aware of these technological capabilities, and to determine what resources are available to them. The plan coordinator should encourage the planning group to tap these technological resources. The coordinator should also be ready to call upon technological services and resources to produce the kinds of data and information requested by the planning group.

Organizing the planning group for effectiveness and efficiency. Earlier it was suggested that a large number of people should be involved in vocational education's planning effort. If the planning group exceeds 15 or 20 individuals, a variety of strategies should be used to assure that each participant shares equally in the total process. Planning groups ranging from 10 to 300 people have been organized and operated in ways which have produced very usable plans in many states.

Several methods are available for accommodating the needs and interests of planners, while simultaneously supporting the plan timeline and proposed format. Among the more useful strategies are:

1. *Task force groups* of three to ten persons deal with a specific planning problem and propose alternative solutions to the larger team. Task forces are disbanded when the specific task is completed.

2. *Topic subcommittees* of five to fifteen persons develop a plan component in essentially complete form for recommendation to the planning team. The task force method may, in some cases, precede subcommittee work on one or more of the alternatives recommended by the task force phase.

3. *Special interest discussion groups* deliberate on a subject in which several people who come from similar backgrounds of work and experience have an interest. This approach can result in identification of specified plan elements.

4. *Diversified interest groups* can be formed to bring together a variety of background, experiences, and needs in areas where inter- or intra-agency collaboration appears to be a viable option as an element of the plan.

There are several variations on these themes which a planning body may find more usable in a given situation. For any choice, though, it is essential that the work of the subgroups be brought back as often as possible to the total group for review, deliberation, and decision making. It is at this stage that "turf protection" can become manageable in most cases.

If those having a strong self-interest and program interest have functioned wisely within a smaller group, they will have successfully imbedded their thinking and needs in the group process. With subgroup support, a specialized interest issue can gradually become a larger group issue until it is adopted, through reasonable thinking and process, as a position of the total planning team. This will normally happen only when the issue in question is proven to be a pervasive one, having implications well beyond that of the special program area of the initiator.

In the process of adoption, such special points of interest become modified to meet the needs of larger issues and groups until acceptance, if not consensus, is achieved. The "turf" of the initiator has then been broken down through the broadening process and no longer is his or her turf alone. but is an idea owned by many potential advocates. Moreover, the planning coordinator has managed the involvement process to accommodate the needs of both the individual and the group.

In this same way, priorities often surface through information, initiative, persuasion, and compromise—indeed, some of the dynamics of planning. Clearly, there is always the potential for counterproductive outcomes resulting from the compromise process. This most often occurs when the initiator or advocate of a particular interest is especially articulate. In such cases, the planning coordinator must assure that fairness prevails, even at the risk of alienation, if the issue is simply not acceptable within the context of the plan. Such a decision should only come when all efforts to compromise have been exhausted and a strong majority (75 percent or more) of the total planning group appears to be in concurrence with the planning team coordinator.

Finally, a good way to assure the effectiveness of staff input into the planning processs is to test elements of the plan against the requirements of the work plans of individual staff members. Most plans are carried out, in one way or another, by the professional vocational education staff. Local vocational education teachers, state staff specialists, and others involved in this work at the action levels normally develop annual individual work plans. Elements of local and state plans must be translatable into individual staff members' performance plans. If this cannot be done, the chances for plan implementation are negligible. Therefore, the wise planning body will assure that the staff members of the planning team can realistically include appropriate goals, objectives, and activities in their own work plans.

A Summary of Outcomes from Staff Involvement

At least six results of staff involvement in the planning process can be treated as outcomes. There are undoubtedly many more, but if even these few can be realized, the rewards of staff involvement will surely justify the time and effort spent.

Accurate use of data and information. In most cases, professional staff have produced the data and information they are using as they deliberate on priorities, goals, and objectives. Knowing that they will ultimately be held accountable by students and parents to produce instructional results should influence the staff to assure that the data and information they have used in casting a plan is accurate and usable.

Completeness of program elements of the plan. Since most staff members will be "program connected" in some way, their involvement should help to verify the completeness and appropriateness of those elements of the plan which relate to instructional program elements. This may have to do with curriculum design and improvement, staff development activities, special needs programs, and so forth. Staff members should also improve the quality of plan elements which affect the changing job scene in a given instructional area, assuring that instructional materials and practice will be contemporary and real-world oriented.

Assignment of implementation responsibilities. Again, this is perhaps the most crucial reason for involving vocational education staff in the planning process. Since they will be, by and large, the implementers of the plan, the staff must verify the reasonableness of the plan elements in terms of day-to-day practice in the vocational classroom, shop, or laboratory. Staff can also provide realistic input as to who, besides themselves, should be assigned responsibility for carrying out noninstructional aspects of a plan.

Ownership through collaboration. Owning a piece of the implementation action is a specific outcome of owning a piece of the planning action. This should not suggest that all implementers are planners in the formal sense. It does suggest that those who plan have a larger commitment to implementation by virtue of having had input into the plan; that is, the staff member/planner will often *implement* in a collaborative way. Such practice will encourage colleagues to collaborate in their planning efforts when individual plans are needed. Thus, the collaborative approach is encouraged because of the experiences gained through involvement in the planning process. Many people must be willing to compromise if their overall needs are to be reflected in the final plan.

Systematic, coordinated delivery systems. Staff involvement in planning will sharpen skills for coordinating practice within vocational education, with other areas of education, and with outside agencies and groups. Internally, the vocational education delivery systems stand to profit from staff influence on management methods and approaches. Most importantly, the staff will leave the planning experience with a new perspective on the total vocational education and manpower delivery system and how it can be made more efficient and effective through their roles as planners, advocates, and practitioners.

Professional rewards. Staff members who have participated actively in the planning process will count among outcomes the professional rewards of working with a diverse group of people who are committed to improving vocational education. For some, these professional rewards may mean a more significant role in planning at another level or with another emphasis. For others, new skills will be developed in working with people, using data and information, making decisions based upon hard facts rather than whim, and seeing the results of their efforts in a plan document which makes sense—one that will be used as a management tool for improving the practice of vocational education.

For at least the next five years, and undoubtedly beyond that time, staff involvement in planning for vocational education will be a major positive dimension of the vocational education scene at every level of activity. As staff who practice the teaching, counseling, evaluating, and administering of vocational education improve their planning skills, they will exert more and more influence upon this vital process. Since they are held accountable for results from any plan, their right to involvement is beyond question. The quality and nature of their involvement in the past has been questioned. Only through a positive approach to improved effectiveness as a planner can the staff member expect to be an accepted participant.

Effective Use of Advisory Groups

Vocational education is responsible for training persons in various occupational skills so that they are employable in business and industry. Therefore, vocational education should reflect the labor market demand for skill training in the community.

Need for Advisory Groups

The organized and intelligent use of advisory groups is a vital factor in stimulating community participation which results in better understanding of the vocational education programs and their contributions and in better service to the community. Advisory groups are essential to vocational education, among other reasons, because of the dynamic changes taking place in the nation's occupational structure.

Since the schools exist for the purpose of meeting the needs of the community, including its industries, employers, and employees, it is logical that communication among these elements of the community be continuous and direct. Such a relationship will provide a justification for the educational program in the community.

Furthermore, leaders in all parts of government, business, and industry call upon experts to assist them in formulating policies and procedures. It is only reasonable that vocational educators avail themselves of advisory personnel from that segment of society which employs the work force.

165

The Human Element in Comprehensive Planning

Because of the rapid changes taking place in our society today, planning is one of the most important elements in public education. With the need for new and improved programs, coupled with the growing scarcity of adequate funding, it is imperative that knowledgeable persons be called upon to provide the recommendations needed to help design and implement vocational education programs to prepare workers for the job market, now and in the future. Without such careful planning, educators cannot be accountable for the kinds and quality of programs they make available to people in their community.

Using Advisory Groups

Advisory groups can serve an important function for vocational education at the national, state, and local levels if they are properly conceived, selected, organized, and used. They can help increase the involvement and support of knowledgeable and competent people representing various agencies, organizations, and institutions with a vested interest in vocational education and manpower development.

A communication network should be established between the different levels of program operation, including the National Advisory Council, state advisory councils, and the local advisory councils. Basically, these advisory groups are responsible for advising official policy-making and administrative bodies on such matters as policy formulation and revision, program planning, preparation of budget requests, and program operation.

These advisory groups conduct studies, make independent evaluations, hold hearings to secure public opinions and reactions, and conduct any other necessary activities. Information secured from such activities should enable them to give appropriate recommendations and reports to the proper authorities. They are also asked to provide technical assistance and leadership.

The use of advisory councils to assist in such functions as needs assessments, comprehensive program planning, continuous program evaluation, and accountability reporting is mandated in the federal legislation for vocational education. There are provisions for the establishment and utilization of a National Advisory Council on Vocational Education, state advisory councils on vocational education, state plan development committees, and local advisory councils on vocational education (P.L. 94-482). Several states have made provision for the use of other advisory groups, such as regional advisory councils, institutional steering committees, program advisory committees, various ad hoc committees for special assignments, and program craft committees.

The concept of using advisory groups to enhance the participation of competent people in the affairs of vocational education and manpower development is sound. Vocational education must have widespread involvement and strong support from the people who are expected to benefit from the program. This approach is based on the principle that those who are expected to benefit from a given program are more likely to support it when they are involved in its development, implementation, and evaluation.

Leaders in government and education who enact vocational education legislation, establish policies and regulations, and develop programs need all the expert advice and support they can get as they strive to fulfill their obligations to their constituents. The use of carefully organized advisory groups for clearly defined purposes represents an excellent opportunity to gain such support.

In the following sections, the National Advisory Council and state advisory councils on vocational education will be discussed briefly, and local advisory groups will be presented in more detail. The composition, selection, organization, and operation of advisory groups at the national, state, and local levels are quite similar. Thus, much of the information presented on local advisory groups can be used with little alteration to understand and work with the national and state advisory councils.

The National Advisory Council on Vocational Education

The National Advisory Council on Vocational Education was established with the enactment of the Vocational Education Act of 1963. The council consists of 21 members who are selected to represent labor and management, new and emerging occupations, vocational guidance and counseling services, the National Commission for Manpower Policy, nonprofit private schools, and women and minority groups, vocational education, handicapped persons, disadvantaged persons, postsecondary and adult vocational education programs, correctional institutions, and the general public. A majority of the membership must be persons who are not educators or administrators in education. The membership must have appropriate representation from both sexes, racial and ethnic minorities, and the various geographic regions of the country.

The National Advisory Council is expected to meet at least four times each year. It has the responsibility to advise the President; the Congress; the secretary of Health, Education, and Welfare; and the commissioner of education concerning the administration of, preparation of general regulations and budget requests for, and operation of vocational education.

State Advisory Councils on Vocational Education

State advisory councils on vocational education were established with the enactment of the Vocational Education Amendments of 1968. These councils do not require a specific number of members, as does the National Advisory Council. However, the members are selected because of their familiarity with the vocational needs of certain interest groups in the state. Members are selected to represent labor and management; agriculture, and state industrial and economic development agencies; community and junior colleges; institutions of higher education; area vocational schools; technical institutes; and postsecondary agencies or institutions that provide vocational education programs. All levels of vocational education must be represented on the council, including the administrator of state and local programs; vocational education teachers, administrators, and board members of local educational agencies; comprehensive secondary schools; school systems with a large concentration of persons with special academic, social, and economic needs; nonprofit private schools; vocational guidance and counseling services; state correctional institutions; and vocational students not qualified for any other category. Also represented are the State Manpower Services Council; women and minority groups; physically and mentally handicapped persons; poor and disadvantaged persons; and the general public. A majority of the membership must be persons who are not educators or administrators in education. The membership must have appropriate representation from both sexes, racial and ethnic minorities, and the various geographic regions of the state.

The state advisory councils must report the time, place, and manner of meetings, as well as staffing and operating procedures. Each state advisory council must hold at least one public meeting each year to give people an opportunity to express their views on the vocational education program. The state advisory council advises the state board on the development of the five-year state plan, the annual program plan, and the annual accountability report, and on policy matters arising from the administration of programs identified in these plans and reports.

The state advisory council must make available to local eligible recipients for federal financial assistance and local advisory councils such technical assistance as they may request in establishing and operating local councils. It evaluates vocational education programs, services, and activities assisted by federal funding and then disseminates its findings and recommendations.

Each state advisory council must identify, after consultation with the State Manpower Services Council, the vocational education and employment needs of the state. It also assesses the extent to which vocational education, comprehensive employment and training, vocational rehabilitation, special education, and other federally assisted programs have developed a consistent, integrated, and coordinated approach to meeting such needs. In addition, it must comment in its annual evaluation report on the reports of the State Manpower Services Council.

Each state advisory council prepares and submits to the commissioner of education and the National Advisory Council on Vocational Education, through the state board, an annual evaluation report which indicates the effectiveness of vocational education programs, services, and activities carried out to meet the program goals set forth in the five-year state plan, annual program plan, and annual accountability report submitted previously to the commissioner. This report should include recommendations for such changes in the state vocational education programs, services, and activities as may be deemed necessary.

The resources of state advisory councils—including their annual evaluation reports, reports on special studies, public hearings, and technical assistance and leadership—should be utilized by those within the state who have the responsibility for comprehensive program planning.

Local Advisory Councils on Vocational Education

The Education Amendments of 1976 mandate the establishment of local advisory councils on vocational education. Each local educational agency or postsecondary institution which receives federal assistance under the act must establish a local advisory council for program areas, schools, the community, or a region.

A local advisory council must include representatives from business, industry, labor, and the general public. Further, there must also be appropriate representation of both sexes and the racial and ethnic minorities found in the particular area.

The local advisory council advises the institution on current job needs and the relevance of programs being offered, and assists the institution with the development of its vocational education plan and preparation of its annual application to be submitted to the state agency for approval and financial support.

States may also provide for other advisory groups. In Senate Bill 930, for example, Maryland amended Article 41 of the Annotated State Code to provide for the establishment of local advisory councils on vocational-technical education. The law calls for: (a) a local advisory council on vocational-technical education in each political subdivision; (b) membership of at least 10 to 15 persons depending on school system size; (c) membership from the general public—especially business, industry, and organized labor—including appropriate representation of both sexes, racial and ethnic minorities, and various geographic regions of the subdivision; (d) educators and administrators in the field of education to serve as nonvoting members; (e) the State Advisory Council on Vocational-Technical Education to provide local educational agencies with any technical assistance requested concerning the establishment and operation of local advisory councils; and (f) local advisory councils to advise the local board of education concerning plans for the distribution of vocational-technical education program accountability reports, local job needs, and adequacy of the vocational-technical education programs being offered.

Types of local advisory committees. Two types of advisory committees are found in most school systems. One is the general advisory committee that works directly with the administrator of the vocational program, and the other is the occupational or craft committee associated directly with a specific vocational program.

The general advisory committee—representing business, industry, labor, and management—should be used to advise in the development and support of the entire vocational education program in a local school district. It should concern itself with the needs of the community, labor market requirements, community relations, policy recommendations, long-range goals, placement and follow-up of graduates, plans for expansion of facilities, and legislation affecting vocational education.

The occupational or craft committee—composed of managers, workers in the field, and program graduates—should be used to provide information on current occupational practices in the field, and changes or trends that will affect training programs. They should also assist in identifying work-study opportunities and in the placement of graduates.

Although most advisory committees in vocational education are continuing groups that meet regularly, the short-term specific-purpose advisory group can be utilized to advantage. Many top business leaders, for example, who may be reluctant to commit themselves to a series of meetings over an extended period of time, will more likely participate as members of a committee that has a target date for completion of its duties. Such a single-purpose committee may be convened for the purpose of developing and implementing a new course that has potential benefit for the employers in the entire community.

Organizing the advisory committee. There are at least eight factors to consider in organizing local advisory committees.

1. *Selection of members.* The district superintendent for vocational-technical education usually selects general advisory committee members for the entire school system. The district supervisor of occupational education programs (trade and industry, business education, or home economics) usually selects the members for special occupational or craft committees. The criteria for selecting members of local advisory committees are: (a) time—persons who are available for meetings on a regular basis; (b) interest—persons who are deeply committed to their work and genuinely concerned with progress in their occupation; (c) experience—skilled craftspersons who are recognized as competent leaders in the field; (d) character—responsible, civic-minded, and cooperative persons concerned with the welfare of the entire community.

2. *Committee composition.* The composition of each local advisory committee should follow the federal and state legislative guidelines and it should be a broad-based group representing all facets of the community.

3. *Committee size.* While there is no specific size designation for advisory committees, it is usually more effective to limit the size. A general advisory committee serving an entire program of vocational education in a local school district might have 12 to 15 members. Occupational or craft committees might have from six to ten members.

4. *Committee management.* The selection of a chairperson is critical to the success of the committee. The chairperson works closely with the school system representative, presides at meetings, and represents the committee at meetings of other groups. The person selected is asked to provide leadership in achieving a particular set of tasks for the school system.

5. *The school representative.* The school representative on advisory committees is usually one or more of the administrative staff of directors, supervisors, or coordinators of each field of vocational education. Teachers may also be invited to participate. The school representative may serve as secretary or general consultant for the group.

6. *Committee appointments.* Persons selected to serve as members of an advisory committee should be notified by letter or presentation of a certificate by the local school superintendent or his designee in order to reflect the magnitude of importance and service attached to the appointment.

7. *Committee agenda.* It is the responsibility of the chairperson and the school representative to plan an agenda for every meeting that will use the time efficiently and effectively. The items should be of sufficient importance to demand the committee's attention, presented clearly, and listed in logical sequence. The school representative must be completely familiar with every issue placed before the committee, and be able to provide members with essential descriptive and statistical information necessary for a comprehensive discussion of a problem.

8. *Communication required.* It is important for a school representative to have a genuine understanding of what committees can contribute and recognize how valuable they can be. If the committee members believe in what the school system is trying to do, and if they are allowed an important part in the development of the program, they will want to be cooperative and involved. It is the school representative's responsibility to supply information and stimulate enthusiasm and communication that will motivate such cooperation and involvement.

Functions and activities. Specific vocational education programs need the advice of persons who represent the craft or occupational field as employers and workers, as well as persons who represent public education and the general public. A committee composed of such persons is commonly known as a craft advisory committee. The general function of a craft advisory committee is to act in an advisory capacity without administrative or supervisory responsibility.

The specific functions of a craft advisory committee are to: (a) determine the need for a particular program; (b) recommend content of the training program; (c) assist in planning the facilities for the program; (d) give advice concerning equipment, materials, and supplies; (e) furnish information concerning apprenticeships, working conditions, employer policies, and employee organizations; (f) give advice on the qualifications of the teacher; (g) help provide opportunities for work-study and job placement; (h) recommend standards students must meet to be considered employable; (i) give publicity to the program and secure the cooperation of the community; (j) help develop programs of interaction among students, teachers, and occupational personnel; (k) act as resource persons for the program; (l) arrange for opportunities for teacher preparation and inservice training; (m) assist in evaluating the program; and (n) help recruit new students. As resource persons, they should be helpful in: keeping teachers informed of new methods used in the occupation; providing instructional materials, equipment, and visual aids; performing or arranging for demonstrations; and speaking to student groups about careers in the occupation and apprenticeship opportunities.

Limits of responsibilities. Two characteristics distinguish advisory committees from other types of committees. They do not possess decision-making authority and members serve without pay. The responsibility for the administration of vocational education rests with the state, county, or city delivery system. No authority, therefore, can be vested in an advisory committee, regardless of the particular type.

Any school representative who organizes an advisory committee should make it clear to committee members that although their advice and intelligence are urgently sought, the responsibility for final action to be taken as a result of their recommendations rests with the school administration and its board of education.

Models of Local Advisory Committees

The following local advisory committees are examples of effective operations established in Baltimore, Maryland. They were organized to serve different vocational education program areas in the city school system.

Data processing committee. In 1970, the educational implications of rapid technological changes in business and data processing created a challenge to structure a meaningful data processing program at the high school level. Through the efforts of a previous ad hoc committee, the data processing program at that time consisted of teaching the wiring of unit record machines and RPG programming utilizing a small computer. A change was needed, but budgetary constraints and the nature of the existing job market for high school students posed problems as to what changes should be made.

To address these problems, the Baltimore City Data Processing Advisory Committee was formed. This broad-based committee was composed of representation from the business sector and local community colleges, and data processing teachers within the school system. Representation also included a liaison person who served on both the Baltimore City and Maryland State Advisory Committees. In addition, educational marketing representatives from various data processing vendors were invited to serve in a resource capacity.

Over a period of two years, the committee met regularly to study the program and make recommendations on program objectives, curriculum, and equipment. To substantiate their recommendations, the members conducted an informal survey of the job market in the immediate metropolitan area to determine if their findings agreed with a more formal study conducted earlier by the Maryland State Department of Education.

Recommendations from the committee were presented to the assistant superintendent of the vocational education area. As a result, the program was modified to emphasize job skills that high school students in data processing could use as preemployment training. Such changes involved the creation of data entry laboratories, replacing the small computer with batch processing terminals, and phasing out unit record machines.

172

At this point the committee wanted to do more than make recommendations. They wanted to be directly involved in strengthening the instructional programs. After considering the alternatives, they took action to help in the following ways: (a) initiated a project called Adopt-A-School, which is designed to solicit support from the business community in any or all of these areas: equipment donations, tours, work-study assignments, and classroom extension activities; (b) donated equipment and business documents for classroom use; (c) served as guest lecturers in the classroom and accommodated tour groups; and (d) conducted inservice workshops for teachers and students to expose them to the "state of the art" in the real world of work.

The mayor of Baltimore wrote a letter of commendation to each committee member citing the committee's outstanding contributions to the instructional program of the city's public schools. Out of an ad hoc group, a permanent advisory committee has evolved for data processing education.

Food service committee. One of the most active of the vocational education area committees is the Food Service Advisory Committee. This group consists of 20 members who represent different facets of food production and service, including representatives from hospital and institutional food services, city and state health and sanitation departments, fast food chains, restaurants, secondary and postsecondary education, and the mayor's Office of Manpower Resources. There are also student members from Baltimore's vocational-technical high schools. The backgrounds of the members are as varied as the operations with which they are associated.

The basic term of membership is two years, and the committee meets six times a year. Meeting locations are rotated, with various members serving as hosts. Meetings are also held in the schools.

Under the dynamic leadership of its chairman, the committee has reviewed the food service curriculum and made recommendations for improvement. Some of the areas studied by the committee have included course selection criteria, student entry requirements, work-study and entry-level employment, school organization, scheduling of food service programs, health department regulations, legislation, sanitation and safety, and career food service opportunities. Recommendations include guidelines for student admission, licensing possibilities, and policies that would serve to upgrade the program.

A major committee recommendation is that two separate food service programs be made available to students in the Baltimore City Public Schools. One program would prepare students for job entry in the food service industry upon completion of high school. The second would be a preparatory program designed for students who are interested in preparing for food service administration and management. Students in the second program would continue their educations after high school graduation by attending one of the colleges in the Baltimore area that grants the A.A. or B.S. degree in food service administration.

The expertise of committee members has been most valuable in reinforcing the course content on sanitation and employability skills outlined in the curriculum guide. It is this type of cooperation between the community and education that allows the schools to help bridge the gap between school and work.

Package machine mechanics committee. Studying manpower projections to determine the need for new vocational programs is unscientific at best. The difficulties encountered in obtaining reliable data have been well documented. Therefore, when representatives from a group of interested businesses contacted the Baltimore City Public Schools in 1974 about the need for packaging machine mechanics, officials enthusiastically welcomed the opportunity to discuss the feasibility of initiating a program to meet their needs.

Representatives from Amstar Corporation, Coca Cola Bottling Company, J. H. Filbert, Inc., Lever Brothers, Inc., McCormick and Company, the Noxell Corporation, and the Package Machine Manufacturers Institute attended the first meeting. To help clarify the thinking on how the program would operate, eight members of the committee traveled to Elizabeth, New Jersey, to see a packaging machine mechanics program in operation at the Edison Vocational-Technical Center. Armed with this experience, the committee was ready to move ahead with the task of planning a program for Baltimore.

Several subcommittees were established to work on proposal development, course content, equipment requirements, location of facilities, and selection of teachers. Business and industry members served on each of these subcommittees and proved to be a valuable resource to educational personnel.

The short-range goal of the committee was to have the program operational within one year. In September 1975, the evening program in packaging machine mechanics was opened to interested adults.

Opening of the day school program was delayed until a machine shop teacher who had many requisite skills was retrained for the new course. The training was accomplished by having the teacher attend the night school program, which was taught by an expert mechanic. The teacher also was provided on-the-job experiences at the plants where members of the advisory committee were employed. In February 1976, the program became fully operational.

Of the many contributions this committee has made, the following are especially significant: (a) getting donations of packaging machines and other equipment required for the program (the value of this contribution was in excess of $100,000); (b) providing training sites for the teacher; and (c) securing a grant of $2,500 to purchase miscellaneous parts, materials, and supplies.

Articles about this program in trade magazines have stimulated widespread interest. Offers to provide additional equipment have been received from firms outside the state. The Ciba-Geigy Corporation in New Jersey, the Doboy Package Machine Company in Wisconsin, and the Nordson Corporation in Ohio have supplied additional equipment for use in the program.

At the invitation of dedicated committee members, the mayor of Baltimore attended a ribbon cutting ceremony for the program during American Education Week in November 1976.

The advisory committee's work to date has been largely developmental in nature, converting a concept into a reality. The committee will concentrate next on developing work-study sites and evaluating the program.

Printing industry labor market committee. In Baltimore, a milestone in cooperative manpower and vocational education planning was reached when representatives of industry, labor, manpower planning, and vocational education came together to make major organizational changes in the delivery of vocational and manpower programs in the printing trades. This case study, however, focusses on the vocational education programs. In September 1972, a local advisory committee was convened by the mayor's Office of Manpower Resources, the manpower planning organization for the Baltimore metropolitan area, to determine the occupational needs of the printing industry. The committee identified a number of important problems whose solutions were, over the next two years, to have a tremendous impact on training for printing occupations in the city schools.

In an industry characterized by rapid technological change, it was found that the instructional equipment was not adequately meeting the training needs of the students. At the same time, it was not possible to reequip the 10 printing programs in the city with the resources available. A work group was assigned to address this problem and the committee began to tap the energies of the Printing Industries of Maryland (PIM), energies that proved in the next two years to be nearly limitless.

Within a month PIM returned a detailed report to the advisory committee that recommended the consolidation of printing programs as a possible solution to the problems of outdated equipment and limited resources. At PIM's request, the vocational education area staff provided samples of curriculum and equipment inventories. Tours of all 10 printing facilities were arranged so that committee members could assess existing conditions firsthand.

By early spring of 1973, PIM had generated a follow-up report that assessed the city-wide printing programs. It specifically recommended, among other things, a reduction from ten to five in the number of schools offering printing instruction. These five "printing centers" were to be strategically located throughout the city and accessible to all students (the number of centers was finally increased to six).

Over the next six months the mayor's Office of Manpower Resources orchestrated nine meetings to develop detailed plans for the transition to a printing center concept. The planning required hard thinking, determination, and follow-through. The advisory committee was faced with over-

175

coming the natural resistance to any major change undertaken in a large organization.

The planning process, both on the state and local level, had to be dealt with immediately to allow rapid transition. Budgets had to be revised to permit the reallocation of resources from school to school. Readjusting staff assignments was also required. School principals were apprised of the changes to be made and cooperated in making them.

Throughout the summer of 1973, the mayor's Office of Manpower Resources and PIM embarked on a detailed market study to reevaluate the needs of the printing industry. PIM developed a survey instrument that was distributed to local print shops asking for in-depth occupational projections based on anticipated growth, turnover, and retirement patterns.

The mayor's Office of Manpower Resources worked with the Regional Planning Council and the State Employment Service to develop industry-wide employment statistics and projections of future growth or decline. The outcome of this survey revealed a stable labor market exhibiting constant, though moderate, growth. Since the surrounding metropolitan counties were training increasing numbers of students in printing trades, it was necessary to proceed with caution so that the total metropolitan training effort would not oversupply the market with entry-level workers.

By October 1973, the vocational education area staff undertook major responsibility for completing the transition in time for implementation in the fall of 1974. During that time, the advisory committee met on several occasions to review the curriculum, to propose innovative counseling and guidance programs, to develop a viable public relations effort, and to establish a city-wide certification procedure for all printing graduates. In addition, the union representatives took leadership roles in designing a program for upgrading printing instructors and in developing curriculum materials.

In September 1974, the printing centers were a reality. The vocational education staff has found this concept to be sound both educationally and managerially. Within the limits of a tightening budget, they can provide quality education for all printing students.

The Printing Labor Market Advisory Committee is a model of cooperative planning efforts. It demonstrates that an advisory committee can initiate and follow through on a broad recommendation, and act as a change agent—but only if vocational education is responsive to change. Through the coordination and interest of the mayor's Office of Manpower Resources, the aid of business and labor was enlisted in defining more clearly an economically sound delivery system. The establishment of printing centers is a first step in moving toward a skill center concept for vocational education in Baltimore.

Finally, and perhaps most importantly, the activities of this committee point out the need for a metropolitan approach to educational planning, one that recognizes the boundaries of a labor market rather than the boundaries of a political jurisdiction or a single school system.

Welding committee. The Welding Advisory Committee members are persons with a primary interest in welding programs that produce well-trained persons, prepared to enter the field with a minimum amount of additional instruction. The committee members represent steel fabricators, shipyard workers, suppliers, educators, and the local manpower office.

In the past three years the committee, under a very enthusiastic chairman, has assisted in making major modifications in the welding program design and operation. Every effort the vocational education area has made to improve the welding program has met with complete support. Although "hard-nosed" industry persons sometimes tend to be unrelenting, in this case, compromise and cooperation have made substantial program advances and changes possible.

The following improvements have been achieved through the efforts of the Welding Committee: (a) the teacher-pupil ratio has been reduced to approximate industrial standards; (b) curriculum materials have been reviewed, revised, and implemented; (c) donations of scrap steel have been increased to meet the need for practical experiences; (d) welding students have been afforded the opportunity to visit many industrial sites; (e) information concerning all Maryland highway and bridge construction is being shared with the welding teachers and placement personnel so that available welding job opportunities in these categories can be explored; (f) students are periodically tested by the Bethlehem Steel Shipyard to assess their skills and to provide motivation; (g) program entrance requirements regarding the physical health of welding students are strictly adhered to; (h) work-study sites available to welding students have been increased; (i) students have received preferential treatment in many hiring situations; (j) occupational information from the American Welding Society has been made available; (k) the number of electrical welding stations for students has been increased through the purchase of additional equipment; and (l)) welding laboratories have been modified for more efficient operation.

Summary

The primary mission of vocational education is to provide students with work skills so they will be employable in the community. To accomplish this, interested and knowledgeable persons must assess the job market in various occupations, new products and processes, changing technology, jobs that are becoming obsolete, and new and emerging fields.

In the training programs for changing fields, some elements must be added to the curriculum and others deleted, all of which requires the best intelligence that can be drawn from industry through advisory committees. Advisory committees can be particularly helpful in identifying up-to-date training sites for work-study opportunities.

Vocational education requires continuous and effective planning for the kinds of programs required today and in the foreseeable future. Facilities, equipment, and staff must be secured in order to implement these changed or new programs of work-skill instruction. Finally, the process is not complete without an ongoing review or evaluation of the current program in each occupational area in order to assess its effectiveness in preparing workers for the job opportunities in the community.

Advisory committees are unique in their ability to provide occupational information and help for vocational programs, and their value has long been established. The kind of cooperation between schools that produce effective programs and their communities can only serve to assist the student to the maximum, justify the program, and provide school personnel with the accountability needed for their efforts.

Vocational educators learned long ago that to train students for declining employment opportunities is the quickest way to incur the displeasure of the community. The advice of advisory committees in advocating the updating and upgrading of vocational education should be utilized in all communities.

Relationships with Other Agencies

New Relationships

Through the strong influence of the federal government, vocational education has evolved from an early emphasis on program areas to an emphasis on serving people. Since the passage of the Vocational Education Act of 1963, vocational education has placed a strong emphasis on special target groups.

Use of advisory groups. Vocational education has had more experience than any other educational component in involving individuals, organizations, agencies, and institutions in advisory capacities to help determine the needs and direction of program development. Even with this history of involving people in planning, developing, and operating programs, vocational education has been mandated to increase its involvement of specific individuals, agencies, and organizations through the enactment of the Education Amendments of 1976.

Societal concerns have brought about this mandate. One of these concerns is a movement to return control of education from the federal level to the state and local levels. Also, there is an increased emphasis on the needs and rights of consumers and a desire for greater coordination between state and local agencies that are responsible for the administration of vocational education. Additional areas of concern are the call for usage of common data and information systems, the continued pressure by the public for making education more effective, and the need for more efficient use of scarce and declining resources. All of these factors have contributed to the call for more involvement in planning for vocational education.

Changes in governance structures. All of these factors have been very instrumental in calling for better communication and more effective cooperation and coordination. The impact of these conditions has brought about a change in the governance structure for education at the state level which has provided for increased involvement of certain institutions, organizations, and agencies.

During the last 10 years, many states have established new organizational structures in an attempt to increase and improve communication, coordination, and cooperation among the various types of educational institutions and agencies. Most of the action has been in the areas of vocational education and higher education. With these changes in governance structures, many states have found themselves with the responsibility for vocational education programs divided among two or more state agencies.

Establishment of a state plan committee. The change in governance of vocational education has caused many organizations, institutions, and agencies to call for increased involvement in the planning process for vocational education. Congress responded to this demand for equity by mandating for vocational education a state plan planning committee to be made up of representatives from certain organizations, institutions, and agencies. This committee must be involved in planning for the administration and operation of vocational education. This new thrust for the involvement of various interest groups in the planning process was developed with the major goal of enhancing quality vocational education opportunities for the people to be served.

Criteria for Evaluative Relationships with Other Agencies

A multitude of ideas and techniques are being used by state and local leaders to involve other agencies and organizations in the process of vocational education planning and program operation. Major standards for reviewing these ideas and techniques are improved communication, coordination, and cooperation. Four major criteria to overlay against the techniques used for the improvement of the standards are (a) whether the technique serves as a catalyst, (b) whether attitudinal changes are observable, (c) whether there is evidence of additional or improved linkages, and (d) whether there is an increased level of involvement.

Does the relationship serve as a catalyst? The first and probably the most important criterion is the anticipated impact that the technique will have on improving relationships with other agencies and organizations. That is, will the technique serve as a catalyst to bring about better communication, coordination and cooperation among agencies and organizations?

Are attitudinal changes observable? The second criterion by which a technique for improving relationships could be measured would be the positive changes in the philosophy and attitude of the administrators of the various groups involved toward the desired standards.

The requirements of the legislation could be met without necessarily resulting in sound and positive relationships among the various groups involved. State planning, as related to the input structure enacted in the Education Amendments of 1976, is an excellent example of this problem. Many states and local areas have looked for ways to implement the newly mandated relationships and still be able to plan and operate under traditional methods. This approach, the traditional method of planning within the system with very little input from outside the system, could negate any change of philosophy and attitudes. The responsibility for change lies with the administration for vocational education.

The whole area of coordination and cooperation versus control of the system through authoritative administration is another focal point. In recent years many new groups have developed an interest in vocational education. With this increased interest comes a desire to be involved in the control of the resources and structure under which the vocational education system operates. Building relationships which involve other groups in the planning structure, without causing duplication in administrative decision-making roles, is very difficult.

Is there evidence of additional or improved linkage? The third criterion for measuring the techniques of coordination and cooperation versus control is to determine if the process provides evidence of additional and improved planning linkages among the groups involved.

To measure a proposed technique against this criterion, the administrator must ask the following question: "Does the process lead toward better coordination among the agencies involved without weakening or duplicating the role of the state or local agency responsible for the administration of the vocational education program?"

Is there an increased level of involvement? If the desired relationships are to bring about improved communication, cooperation, and coordination, then an increased level of involvement becomes the fourth criterion. By leading to better understanding by all agencies, this will improve the chances for more effective outcomes.

If the above premises are accepted, then one can readily see that involvement in the total operation as opposed to just planning could soon develop. Involvement in program operation could make it extremely difficult for the vocational education program to be administered effectively unless a central or sole decision point is maintained. Therefore, the establishment of appropriate criteria and procedures for determining the desired level and extent of involvement is very important. Most writers on the subject and enacted legislation support the involvement of other agencies at the level of program planning, but they do not support the same degrees of involvement at the administrative or operational level. The primary concern at these levels is effective evaluation of outcomes and accountability reporting by the responsible federal, state, or local agency.

All techniques to be used to develop better relationships among agencies should be measured against the above criteria. Building relationships is not an easy task, but it can be done much more effectively by using sound criteria that will measure the relationships and results.

Exemplary Examples of Joint Relationships

Since passage of the Education Amendments of 1976, many exemplary joint working relationships have been developed and implemented by state and local agencies. The following section describes some of the techniques which have been used by the Indiana State Board for Vocational and Technical Education to implement the letter and spirit of the law.

A plan for planning. The major emphasis of the new federal legislation is increased involvement of individuals, organizations, institutions, and agencies in the planning process for vocational education. To accomplish this objective, a plan for planning must be developed. The plan will not only serve as a guide for involvement, but it can be very helpful in answering questions regarding the kinds and levels of involvement.

The plan for planning must be developed before any planning is undertaken. It needs to be utilized throughout the planning process to guide the various groups involved toward increased involvement. The plan refers to specified steps for providing inputs into the planning process.

Indiana State Plan. The procedure for state plan planning for vocational education programs in the state of Indiana (Indiana State Plan, 1978) is described as follows:

> Any state desiring to receive funds under this Act (P.L. 94-482) shall submit to the Commissioner, during fiscal year 1977 and during each fifth year occurring thereafter, a state plan for vocational education for the five fiscal years succeeding each such fiscal year. The five-year state plan shall include an annual program plan for each of the fiscal years included in the five-year state plan.
>
> The State Board shall involve the active participation of a planning group as indicated in section 107 of the Act. The State Board shall establish the method of forming a planning group to include representatives of all agencies, councils, and individuals indicated in section 107 of the Act. The State Board shall establish the planning group. At least four meetings of the planning group must be held during the planning year: (a) meeting no. 1 shall be held before the plan is developed; (b) meeting no. 2 shall be held to consider the first draft of the plan; (c) meeting no. 3 shall be held to consider the draft of the plan rewritten to reflect the results of meeting no. 2; and (d) meeting no. 4 shall be held to approve the final plan.
>
> The State Board shall, during the year in which it formulates any five-year plan required under this Act, after giving sufficient public notice, conduct a series of public hearings throughout all regions of the state in order to permit all segments of the population to give their views on the goals which ought to be adopted in the state plan including the courses to be offered, the allocations of responsibility for these courses among the various levels of education and among the various institutions of the states, and the allocation of local, state, and federal resources to meet those goals. These views shall be included in the final state plan with a description of how such views are reflected in the plan; and if particular views are not reflected, then the plan shall set out the reasons for rejecting them.

> If the agencies, councils, and individuals making up the State Plan planning group and the State Board are not able to agree upon the provisions of the state plan, the State Board shall have the responsibility for reaching a final decision on those provisions; but the State Board shall include in the plan: (a) the recommendations rejected by the Board, (b) the agency, council, or individual making each recommendation, and (c) the reasons of the State Board for rejecting these recommendations. Any agency or council described above which is dissatisfied with a final action of the Commissioner under this subsection may appeal to the United States Court of Appeals for the circuit in which the state is located in accordance with the procedure specified in section 434 (d) (2) of the General Education Provisions Act.
>
> The procedure to be followed in getting the state plan completed includes (a) final approval by all agencies, councils, and individuals represented on the State Plan planning group, (b) a State Plan Public Hearing conducted by the State Board for Vocational Education; (c) certification by the Attorney General of the State; (d) certification by the governor of the State; and (e) approval by the State Board.
>
> When approved by the State Board, the five-year state plan shall be submitted to the Commissioner by July 1st preceding the beginning of the first fiscal year for which the plan is in effect.

Indiana has now developed its five-year state plan for 1978-1982 and its annual program plan for the critical year of 1978-79. This was accomplished by following the procedure explained in the previous section. In the next four years, the annual plan, which is to be explicitly displayed year after year in the five-year plan, is required to be updated at the beginning of each fiscal year. Three meetings of the State Plan Planning Group, rather than four, are required each year in updating the annual program plan. Also, one public hearing conducted by the State Board, rather than a series of public hearings, is required on the annual program plan.

State Plan Input Committee. The plan for planning includes the formation of a State Plan Input Committee. The following individuals, agencies, and organizations must be included in accordance with the Education Amendments of 1976, Title II, section 107 (a) (1):

a a representative of the state agency having responsibility for secondary vocational education programs, designated by that agency;

b. a representative of the state agency, if such separate agency exists, having responsibility for postsecondary vocational education programs, designated by that agency;

c. a representative of the state agency, if such separate agency exists, having responsibility for community and junior colleges, designated by that agency;

d. a representative of the state agency, if such separate agency exists, having responsibility for institutions of higher education in the state, designated by that agency;

e. a representative of a local school board or committee, as determined by state law;

f. a representative of vocational education teachers, as determined by state law;

g. a representative of local school administrators, as determined by state law;

h. a representative of the State Manpower Services Council appointed pursuant to section 107(a)(2)(A)(i) of the Comprehensive Employment and Training Act of 1973, designated by that council;

i. a representative of the state agency or commission responsible for comprehensive planning in postsecondary education, which planning reflects programs offered by public, private nonprofit and proprietary institutions, and includes occupational programs at a less-than-baccalaureate degree level, if such separate agency or commission exists, designated by that agency or commissioner, and;

j. a representative of the state advisory council on vocational education, designated by that council.

The Indiana State Plan Input Committee consists of a person or persons representing each of the following organizations: local school boards, State Board of Education, Commission for Higher Education, local secondary school administrators, administrators of postsecondary institutions, boards of trustees for institutions of higher education, business, labor, agriculture, State Advisory Council for Vocational Education, State Manpower Services Council, and the Indiana Vocational Association, plus the state superintendent of public instruction and the commissioner for higher education.

The designated agencies must be involved throughout the process of planning for vocational education. The state board was created by state legislation to promote coordination among educational agencies. The State Plan Input Committee in Indiana is made up of the same educational agencies and organizations as the State Board for Vocational and Technical Education, with the addition of a representative of the State Advisory Council, State Manpower Services Council, and Indiana Vocational Association.

State Plan Writing Team. Other agencies may be involved throughout the entire planning process. A State Plan Writing Team responsible for preparing draft copies of the state plan for the planning committee's review and action should also have broad representation from other agencies involved in vocational education activities at the state level. A team with resource persons from secondary and postsecondary agencies, state and local level administrators, State Manpower Council, State Advisory Council, and others can work extremely well for total involvement.

Although a writing team made up of several members calls for much communication, coordination, and cooperation, it is an excellent technique for the involvement of other agencies.

State Plan Sounding Committee. An innovative involvement technique can be developed through the use of a sounding committee for the State

Plan Writing Team. This committee is made up of administrative staff representatives from each of the agencies represented on the State Plan Input Committee. Most of the agencies are represented on the State Plan Input Committee by board or council members. This technique gives the top-level administrative staff in these agencies an opportunity to serve the State Plan Writing Team during the interim between input committee meetings to react to drafts, ideas, or concepts being developed. This is a way of involving different levels within the other agencies in the planning process.

Public meetings and hearings. The series of public input meetings held before the development of the state plan, the state plan input committee meetings, and the final public hearing by the state board are methods used to involve other agencies and the general public in the process of planning for a total vocational education program. Other agencies would not be expected to testify at the public input meetings or public hearings if the state board has developed a proper and effective communication system which allows for direct input by those agencies. The public meetings and hearings should be totally for the purpose of receiving input from the general public in the planning process.

Regional planning groups and meetings. The involvement of other agencies in the planning process for vocational education is important at all levels of operation if effective results are expected. Involvement of other state agencies without involving their regional and local subdivisions could be counterproductive.

The state board must take an active role in encouraging local institutions to utilize the input and assistance of other agencies in planning their vocational education program.

Regional groups can be established to foster better communication, coordination, and cooperation among agencies below the state level. These committees should have the same type of representation from the organizations and agencies that are included on the state plan input committee. Regional communication meetings should be conducted by the state board to bring together the various schools, institutions, organizations, and agencies to discuss the needs of the area and better ways of working together to meet those needs.

Other advisory committees and task forces. Other agencies may be involved on each advisory committee or task force appointed by the state board. Many special committees may be utilized by the state board to fully involve the many interest groups and agencies. Through this kind of communication, excellent linkage and coordination can take place.

Some of these committees include the state advisory committee for personnel training, special needs assessment task forces, state advisory committee for research and exemplary activities, and a special task force on missions and goals of schools and institutions.

State Occupational Information Coordinating Committee. The need for common occupational data and information has been a specific concern of vocational education and manpower planners for some time. Through the federally mandated State Occupational Information Coordinating Committee (SOICC), the major agencies concerned with this problem are brought together to coordinate the collection and dissemination of common occupational information. Composed of representatives of the State Board for Vocational Education, the State Manpower Services Council, the state agency responsible for the Rehabilitation Services Act, and the State Division of Employment Security, this committee should have a large impact on the coordination process among the agencies involved.

Through a common understanding of mutual concerns, SOICC should be a major link in the total chain of coordination activities.

Joint programs and projects. Better communications and cooperation will bring about improved coordination among agencies involved in vocational education. The true test for coordination can come only when the agencies involved provide special programs and projects on a joint basis for the expansion and improvement of vocational education opportunities.

Because most state agencies are responsible for the administration or supervision of the administration of programs and not for their operation, joint programs and projects become somewhat difficult to implement. With improved planning and communications, however, many joint programs and projects will come to the forefront.

Some of these activities are as follows: jointly sponsored state conferences, workshops, and other types of personnel training functions; jointly sponsored state needs assessments, dissemination projects, and curriculum development centers; and jointly sponsored local and regional planning projects with services coming from various agencies. The number and kinds of jointly sponsored and operated programs and projects are limited only by the amount and quality of communication, coordination, cooperation, and resourcefulness of the various agencies.

Future relationships. The relationships developed today will have an impact on the relationships of the future. The federal government, state governments, related organizations, and the general public are looking to vocational educators to implement the types of relationships necessary to bring about better communication, cooperation, and coordination among agencies. The outcome should be a more efficient and effective system for vocational education. Providing leadership for vocational education in the future depends upon how well we implement those relationships now.

CHAPTER 7

TRAINING PERSONNEL TO PLAN EFFECTIVELY

Darrell L. Parks

Educational planning can be approached from different viewpoints. It can be viewed as a complex, technical, specialized process designed and managed only by trained specialists. On the other hand, planning can be viewed in general terms as one of several components of the administrative process —an executive skill and responsibility, a critical aspect of leadership.

Historically, the latter approach, that of viewing planning in general terms, has been the one used by educational practitioners. Consequently, educational planning has been a corporate part of the administrative personnel development program and has not received any particular emphasis in relation to other components in the administrative process.

Recent social, economic, and legislative developments, however, have placed educational planning in a different perspective. "Limited resources, the appearance of viable alternatives to expenditures on education, decentralization in decision making, and the stress on accountability have resulted in a recent reemphasis on planning in education" (MRCU, *Factors*, 1976, p. 1). To further illustrate the increasing level of sophistication regarding educational planning, the Education Amendments of 1976 (P. L. 94-482, p. 2169) state that one purpose of the act is to "assist states in improving planning in the use of all resources available to them for vocational education and manpower training. . . ." In addition, the act explicitly sets forth planning and accountability requirements in Title I, sections 107, 108, 112, 131, 135, and 161.

In the past, the major directions and goals of vocational education planning were significantly influenced by external forces and pressures. Sociologists, economists, labor market analysts, human resource specialists, and politicians have been instrumental in charting vocational education's future. Such external forces, although aimed toward worthy social and economic outcomes, have often failed to take into account the educational and management considerations that are an integral part of a viable vocational education delivery system. Program requirements and processes have been mandated that are neither educationally sound nor economically advisable.

The increasing emphasis upon educational planning and the charge that vocational education assume a proactive posture in determining its future necessitate the serious consideration of a new and more highly sophisticated approach to the preparation of personnel involved in vocational education planning activities. As vocational education comes of age, the treatment of educational planning in general terms is both inadequate and inappropriate. Program planning in vocational education must be looked upon as a process, shifting gradually but steadily from a general administrative art to a scientific art, with specific implications for increased emphasis on the development of personnel involved in planning.

Specialized Planning Skills Needed

Comprehensive planning in vocational education is a way of simultaneously looking at the present and anticipating the future. It is multi-faceted, embracing a range of activities from needs assessment to evaluation and accountability at all levels of program operation. As applied to vocational education, it is an emerging modern managerial technology which requires a systematic way of thinking comprehensively, the demonstration of specialized planning skills, and a directed, organized approach if it is to be effective in fulfilling the expectations and demands of today's social, economic, and legislative communities. Consequently, vocational education program planners of the future must be prepared for their role. No longer can individuals serving in a major planning capacity be promoted into such positions as a reward for being successful program managers, efficient administrators, or teachers. They must be carefully recruited, trained individuals capable of performing effectively in an increasingly important program planning and evaluation mode.

The first step is to identify the major components of a personnel development program for vocational education planners. Once properly identified, such components become the basis for further identifying the essential duties and tasks in which planners must be skilled and towards which training must be directed.

Goals and Objectives of a Personnel Development Program

The purposes, goals, and objectives of a personnel development program must be directed toward the preparation of "macro" and "micro" planners for vocational education who can satisfy the targeted and anticipated social, economic, and legislative mandates for vocational education. Planners must demonstrate an understanding of the planning universe and be equipped with demonstrable competencies to employ a systematic planning process in the design, implementation, and evaluation of vocational education programs. However, a mere understanding of a systems approach to planning will not be sufficient. A personnel development program for vocational education program planners must also address content that is critical to vocational education's short-term and long-range future. It must provide opportunities for participants to gain experiences and sharpen skills which will assure that planning is not only systematic in design, but consistent with the overall philosophy, goals, and objectives of vocational education and sensitive to internal and external accountability expectations and legal points of compliance.

Orientation to the Systems Approach

As previously mentioned, comprehensive vocational education planning must embrace a systems approach that proceeds from identifiable needs to predictable outcomes. Prospective vocational education planners must demonstrate an understanding of a systems concept that describes the complete interaction of the individual elements of the system and their relationships as a functional unit. Thus, one goal of a personnel development program for vocational education planners is the conceptualization of a systematic planning process and the preparation of program trainees to apply that process.

In addition to becoming skilled in the application of a systematic approach to planning, prospective planners of vocational education programs must become familiar with the following elements of the planning process.

Authoritative base. Program planners must initially establish an authoritative base upon which to build their planning efforts. They must be attuned to the importance of identifying and interpreting legislative and administrative requirements, policy statements, jurisdictional parameters, and political and power structures that have to be taken into account in the early stages of a planning effort.

Mission. After developing an authoritative base, prospective planners must then be equipped with the ability to prepare mission statements which, in essence, chart the overall direction and scope of ensuing planning efforts. Statements of mission can also be interpreted as "a definition-of-purpose stage" in the planning process. They may take the form of a "charge," but regardless of their specific format, their purpose is essentially the same: to allow the planners to begin planning with a commonly defined perception of the issues and a common sense of direction.

Crucial tasks. Because of the diverse array of skills and knowledges demanded of vocational education program planners, some attempts have been made in recent years to identify crucial tasks that make up the specific duties and responsibilities of program planners. These tasks have generally been identified through limited research and by doing task analyses of state planners' job descriptions. Although the identification of skills and knowledge for planners resulting from such efforts were related primarily to state staff planning positions, there are strong indications that similar planning skills are appropriate at all levels of program operation. Thus, these crucial tasks should provide the basis for the content of a personnel development program for vocational education program planners.

188

Generally, the tasks have been grouped into six major cluster areas (MRCU, *Final Report,* 1976, iv) and include:

a. Defining and justifying factors to consider in adding, modifying, or deleting vocational education programs

b. Identifying and translating manpower information for planning vocational education

c. Assessing the cost-effectiveness of alternative means of delivering vocational education

d. Using a management information system in planning vocational education

e. Demonstrating communications abilities necessary to make a "working" plan for education

f. Staffing for vocational education planning.

Provisions for Evaluation

In addition to the six major cluster areas of the planning process, educational planning must encompass provisions for evaluation from the standpoints of both process and product. Early in the conceptualization of a systems design for planning, assessment and evaluative criteria must be taken into account. Planners must be made sensitive to the role that evaluation plays in the planning process and demonstrate the competencies that are consistent with acceptable and proven evaluation techniques and processes.

Thus, the purposes, goals, and objectives of a personnel development program for vocational education program planners can be synthesized to include: (a) an orientation on the part of potential planners regarding the concept of planning as a major and essential component in a vocational education delivery system; (b) an understanding and application of a systems approach to the planning process; and (c) the development and demonstration of substantive competencies related to the planning process and categorized into the major cluster areas of factors for consideration regarding program additions, modifications, and/or terminations; manpower information; plan implementation; and staffing and evaluation.

These major areas of concern are, admittedly, broad in scope, but are proposed as the basic ingredients of a personnel development program for vocational education program planners. Specific tasks and knowledges must be further delineated and articulated in developing a viable, relevant personnel development program for planners.

Training Requirements for Planners

At first glance, the preparation of vocational education program planners appears to be somewhat simple and mechanistic. However, observations and experience lend strong support to the thesis that the formal preparation of program planners for vocational education may be highly complex and diverse in design and delivery. The following considerations must be taken into account.

Recruitment and Selection of Program Planners

Perhaps the single most important factor in the preparation of planning personnel is not training per se, but the recruitment and selection of appropriate individuals who are to be prepared as program planners. This should not imply that there is a select segment of the population that could be classified as natural planners, but it is true that successful planners tend to possess similar traits.

In the recruitment and selection of planning personnel, a clear definition of role(s) must be established in order to give due consideration to recruitment/selection characteristics. For example, a different set of characteristics may be more appropriate for planners who will be charged with the major responsibilities of designing and directing a global planning effort than for those who will play a functional or supporting role in specific planning endeavors, e.g., local plans, state plans, etc.

Furthermore, planners differ in their approach to planning depending upon their professional preparation and experience. For example, a participant with a background in guidance and counseling who is engaged in a planning activity can be expected to give greater emphasis to certain planning variables than participants with a different professional background (MRCU, *Factors,* 1976). Persons with expertise in a variety of discipline areas can be a valuable asset to a planning team.

Program Planner Characteristics

Essential characteristics to be taken into account in the recruitment and selection of potential program planners include:

1. *Personality.* Potentially successful planners should possess an outgoing, optimistic personality with a low frustration index. Individuals must exhibit a flare for the many challenges that planning requirements pose and demonstrate enthusiasm and a positive attitude in addressing such challenges rather than a cautious or negative attitude which may result in a less creative and productive output.

2. *Aptitudes/attributes.* Selected aptitudes and attributes are desirable in individuals who are to serve in program planning capacities. The major ones suggested here include those related to mathematics, logical thought progression, decision making, and ability to articulate ideas clearly.

Mathematical aptitude is critical to planners, not so much in terms of applying formulas or probability testing, but in the organization, manipulation, and massaging of data into descriptive and interpretive tables, charts, and trend projections.

The process of logical thinking is inherent in the systems approach to planning. Such a pattern of thinking not only lends order to the planning process, but also tends to foster the necessity to think ahead in terms of total needs rather than on a day-to-day basis. Perhaps the best illustration of the efficiency and effectiveness of such patterns of logical thought progression is the popular and widely applied Planning, Programming, Budgeting System (PPBS) concept, designed and first used extensively by the U.S. Department of Defense.

The ability to make a decision after considering all alternatives and then to communicate that decision concisely in the planning narrative is another valuable attribute.

3. *Education/knowledge background*. Vocational teachers are good choices as program planners because they are oriented toward students as well as toward programs or disciplines. It also appears desirable for potential planners to have the ability to understand, synthesize, and apply research.

4. *Experiential background*. Experience prerequisites for program planners vary depending upon the nature of the planning positions. Macro planners, those responsible for designing and directing the total planning effort, should have some teaching and administrative experience, preferably at the various levels of program operation. If the experiential background is not broadly based, it appears highly desirable for macro planners to have enjoyed some employment longevity at the programmatic level(s) for which they are expected to design and direct planning activities.

Finally, in view of the necessity for effective planning to fit community values and attitudes, potential program planners should possess a thorough knowledge of the current and ongoing administrative posture, laws, regulations, policies, program approval and funding criteria, and reporting procedures.

Planning competencies. Aside from recruitment and selection criteria for vocational education program planners, the identification of specific competencies which are desirable for individuals assuming planning roles must be taken into account. A recently conducted national conference for vocational education state planning staffs (MRCU, *Final Report*, 1976) resulted in the identification and rating of 57 "Need for Training" competencies by conference participants engaged in planning. These competencies emerged essentially from the six major cluster areas of tasks to be performed by planners which were discussed earlier in this chapter. Conference participants also clustered the 57 competencies into the following categories: political context, economic context, cultural context, organizational context, personal context, and inquiry and communications skills.

Though these 57 competencies do not comprise the total content of a personnel development program for vocational education program planners, they do provide a point of departure in arriving at relevant and meaningful program content. (A listing of the "Need for Training" Competencies will follow.) Combined with an introduction to the planning process, such content provides a basis for the design of a vocational education personnel development program for planners.

In terms of personnel development programs for vocational education program planning personnel, observations and past experiences indicate that a variety of different modes could be employed. Regardless of the specific design of such a program, there appear to be some fundamental similarities. A brief discussion of these similarities is presented in the following paragraphs.

1. *Experience must be structured.* In view of the increasing importance and complexity of the planning process, personnel development programs for vocational education planners must be structured as a series of planned and coordinated activities and events. Vocational education can no longer anticipate the appearance of effective planners via some mysterious formula, but must assume a proactive posture in the recruitment and preparation of program planners for the future. The assumption of such a posture will necessitate a commitment on the part of state and national vocational education administrative leaders as well as the allocation of time and financial resources in order to achieve such ends.

"Need for Training" Competencies by State Planners of Vocational Education (MRCU, *Factors,* 1976, pp. 68-73)

I. *Political Context*
  A. Interpret state and federal laws and procedures pertaining to vocational education.
  B. Interpret policies and procedures established by state boards of education and vocational education.
  C. Develop and describe the relationships between social and economic plans of a state and vocational education.
  D. Delineate the political feelings of rural, urban, and ethnic groups and determine their relationship to vocational education.
  E. Develop measurable vocational education program goals and objectives.
  F. Establish an articulated structure for implementing and conducting effective programs of vocational education (K-adult) as an integral part of the state's total educational effort.
  G. Develop a system for obtaining and disbursing state and federal aid as it relates to legislative guidelines and community control.
  H. Identify, monitor, and support passage of local, state, and federal policies and laws which foster vocational education.

II. *Economic Context*
  A. Identify, collect, and interpret demographic and manpower data for projecting annual and long-range employment needs by occupational category and skill level.
  B. Translate annual and long-range employment needs into occupational courses with identified priorities by geographical area.
  C. Project the physical, fiscal, and human needs to accommodate vocational education programs.
  D. Identify local financial and human resources available for program implementation.

E. Delineate and analyze cost-benefit information regarding vocational education programs.
F. Assess the cost-effectiveness of alternative delivery systems for vocational education (e.g., on-the-job training, institutional training, home-study) and determine the most appropriate programs.
G. Determine the commitment of business and industry to assist in conducting the vocational education program.
H. Determine cost and need for ancillary services, such as teacher education and curriculum services, for implementing a five-year projected program.
I. Identify and determine the relationship between existing public and private vocational instruction programs by geographical area and educational level.
J. Identify public and private resources designated for vocational education, other resources which may be used for vocational education, and constraints within which the funds are to be used.
K. Write proposals for funding projects to assess the need for, to operate, and to evaluate vocational education programs.
L. Prepare a contingency resource plan to carry out programs projected over the next five years should the original resource plan fail.
M. Develop vocational education programs to influence social and economic development (e.g., type and location of industry).
N. Identify and define emerging occupations.
O. Evaluate trends in program offerings in terms of the degree to which vocational programs, in the public schools and other sectors, are meeting the employment training needs and student enrollment demands.
P. Determine the optimal resource and program mix for achieving state objectives.
Q. Develop and present an annual and long-range plan for vocational education to a board of education.

III. *Cultural Context*

A. Evaluate the role of vocational education in meeting societal and individual needs.
B. Synthesize available resources and program objectives, and relate them to student needs (youth and adult), manpower demands, and cultural, social, and political values.
C. Identify attitudes of the local population and educational agency toward vocational education for minorities and special needs groups.
D. Inventory the abilities, aspirations, and needs of present and potential students (youth and adult) as they relate to vocational education.

E. Characterize the population by geographical areas and contrast local areas with state regional, and national averages.

F. Develop a format for communicating need for vocational education to the public.

G. Translate broad social and economic plans into regular and special vocational programs.

H. Identify new and innovative vocational programs and ways to encourage schools to adopt improvements.

I. Advise on changes needed in existing programs to accomplish priority goals and on the transition for introducing new programs.

J. Identify and address ethical dilemmas and value conflicts in planning vocational education (e.g., discrimination, energy consumption, government involvement).

K. Utilize current knowledge in environmental impact as a means of evaluating directions to be taken by vocational education.

L. Determine existing and future social conditions which have implications for the development of vocational education programming.

M. Take into consideration the image of vocational education when planning and implementing programs.

IV. *Organizational Context*

A. Develop a procedure for specifying positions, offices, and roles for the administration of program planning, and define how they are in keeping with the goals of the entire education department.

B. Organize and direct group of staff members and others engaged in planning for a total program.

C. Identify expectations and needs of each job incumbent in program planning, and determine how the organizational context is or is not meeting the expectations and needs.

D. Develop a system for organizational feedback and control to aid in future operation, improvement, and change of the vocational education program planning staff.

E. Develop insight into human nature as it affects the development and accomplishment of plans.

V. *Personal Context*

A. Identify personal values, needs, skills, abilities, and aspirations and determine the implications for interpersonal communications and effectiveness.

B. Determine opportunities for social, technical, and professional growth for the vocational education program planner.

C. Design a program of self-development based upon self-assessment and assessment by others.

VI. *Inquiry and Communication Skills*

  A. Engage systematically in research required for educational program planning.
  B. Develop the skills to communicate successfully with other professionals.
  C. Use statistical and research procedures and methods to verify information.
  D. Identify measurable criteria for final program selection and evaluation.
  E. Determine the most appropriate methods for program evaluation.
  F. Develop and utilize a management information system to serve a planning, programming, and budgeting system (e.g., follow-up, program enrollment).
  G. Select and disseminate needed materials and information for state and local program planning.
  H. Assist local planners, formally and informally, in identifying alternative strategies for accomplishing program goals and objectives.
  I. Clearly express oneself for effective intra- and inter-agency communications.
  J. Prepare and present staff papers identifying program and resource priorities and requirements.

2. *Preparation is developmental.* A second similarity in programs directed toward the preparation of vocational education planning personnel is the recognition that the developmental process must build upon individual abilities, needs, and experiences. Thus, program planners cannot be totally prepared for their roles via a conventional preservice approach but will require regular and sharply focussed inservice and independent study opportunities and experiences.

3. *Internships are important.* Experience-based programs are a third commonality in the preparation of vocational education planners. The value of internship and simulation exercises is recognized almost universally as an appropriate teaching strategy to assist vocational educators in planning programs.

4. *The program is dynamic in design.* Personnel development programs for vocational education planners must be responsive to changing social, economic, legislative, and educational conditions.

Because planning environments are diverse and complex, the design of a universal delivery system for preparing vocational education planners would be of little value. Viable programs for preparing planning personnel must be built upon individual needs and in accordance with the capabilities of the institution or agency responsible for such a system.

In general, however, the ingredients of a successful personnel development program include: (a) a recruitment/selection process; (b) an indoctrination to a systems approach to planning and opportunities for participants to develop and demonstrate competencies critical to the planning process; (c) individually tailored and structured activities and experiences based upon abilities, needs, and role expectations; (d) a major emphasis toward inservice and independent study activities; (e) simulation exercises and internships (preferably paid); and (f) provisions for flexibility to adjust to emerging and projected planning expectations and pressures.

Employment and Development of Planning Personnel

This chapter has emphasized the recruitment, selection, and development of new personnel to serve in vocational education planning capacities. However, little reference has been made to the need for continued development of experienced planning personnel. A comprehensive program for the development of planning personnel would include: (a) a further elaboration upon the employment and development of new recruits, and (b) the continued professional development of veteran planners as a means of maintaining their sensitivity and responsiveness to prevailing and projected planning thrusts and expectations.

Entry-level personnel development. Prospective planners should undergo a detailed recruitment and screening process. Potential recruitment reservoirs, in order of preference, include (a) existing staff personnel, (b) experienced new educational personnel, and (c) nonexperienced personnel professionally prepared for employment in the field of education.

Once prospective candidates have been selected for employment, their orientation to the planning concept should commence immediately. This orientation may be acquired through formal course offerings before employment. However, a more appropriate and cost-effective approach may be via a paid internship of carefully designed and directed activities under the administration and supervision of qualified and capable existing senior planning staff personnel.

The internship would embrace a 12-month block of time. Initially, attention would be directed toward an indoctrination to planning as a system and an opportunity for interns to participate in field trips to other agencies that either impact upon the delivery of vocational education services or provide essential information and data critical to the vocational education planning process. Examples of such field trips may include, but not necessarily be limited to, the Department of Economic Development, the Bureau of Employment Services, CETA bases, manpower study offices, census data collection agencies, and designated computer centers.

Upon completion of the front end of this 6-week to 12-week intern experience, participants would then move into a 9-month micro planning role, performing in a support capacity under the supervision of a senior planning staff member. During this phase of the internship, participants would be given numerous opportunities to apply and refine their planning skills in a realistic and ongoing planning environment. Also, during this experience-based phase of the intern program, participants should be encouraged to take advantage of noneducationally oriented workshops, conferences, and seminars that focus on planning, especially those sponsored by other governmental agency and business/industry affiliates. Appropriate release time and incentive (defrayment of incurred expenses, etc.) should be available to encourage participation in such activities in anticipation that participants would gain a broad-based understanding of the planning process and the interrelation of vocational education planning with noneducational entities.

Advantages of a paid internship approach to the development of planning personnel include more closely controlled and directed programs of applied planning, realistic experiences based upon everyday encounters, the opportunity to evaluate the results of applied planning activities, and the provision of personal accountability which generally solicits a higher level of commitment on the part of the intern participants.

Admittedly, this approach to personnel development may be more highly structured and involve more time than has normally been perceived as necessary. However, in an age of increasing sophistication in vocational education planning, an equally increasing sophistication in the approach to the development of planning personnel is imperative.

Veteran staff inservicing. The ongoing professional development of veteran planning staff personnel is equally important in a viable personnel development program for planners. A constant shifting in terms of planning needs and expectations plus an ever-increasing awareness and sensitivity to the complexities of a total planning effort dictate a systematic process of self-renewal and upgrading for veteran planners.

Let it be emphasized, however, that one of the conditions contributing to the professional growth of veteran planners is not participation in specially designed professional improvement workshops, conferences, seminars, etc., but the continuity of employment as a planner under consistent and creative overall administrative leadership. The opportunity to incrementally build and refine a system of planning over an extended period of time—capitalizing on apparent strengths, and adjusting for system deficiencies and/or inadequacies—is a critical factor in the design, implementation, and refinement of an effective planning system.

Beyond the factor of continuity of employment and addressing specifically the more conventional inservice needs of professional planners, there is documented evidence that such needs are recognized and that planners are interested in addressing those needs. Based upon a recent survey of professional inservice needs as expressed by state staff planning personnel, critical areas of priority include inquiry and communication skills and competencies related to the economic and cultural dimensions of planning (MRCU, *Final Report*, 1976). The purpose of calling these priority areas of expressed need to the attention of the reader is not to imply that these are the only needs nor that proposed inservice activities should address these specific needs. The point to be made is that needs do exist and there should be a systematic process of needs assessment to identify those of high priority which should provide the basis for planning meaningful inservice activities.

In terms of a delivery mechanism for veteran planner professional improvement, preferred learning modes have been identified to include national conferences, independent study, inservice activities, and formal course work. As the felt need for a more sophisticated planning process is anticipated in the future, the possibility of highly structured, intensive, and sharply focussed postgraduate planning institutes could very well offer an additional option for professional planning personnel at all program levels.

Summary

The purpose of this chapter has been to emphasize the importance of thoroughly informed, competent personnel to carry out the planning responsibilities mandated for vocational education in this nation. Due to the complexity of the total program planning process, planners must possess specific personal and professional characteristics, knowledges, and skills in order to perform effectively and efficiently. Good planning is systematic, purposeful, and productivity oriented; the same could be said for the preparation of vocational education planning personnel.

References Cited

Minnesota Research Coordinating Unit. *Factors, priorities, and information needs in planning vocational education*, 1976.

Minnesota Research Coordinating Unit. *National conference for state vocational education planning staffs—final report*, 1976.

Selected References

Dunham, D. B. A planning process to make vocational education more responsive to real needs. *American Vocational Journal 52*(6), September 1977, 24-27.

Gray, K. E. *Competencies needed by personnel engaged in program planning in state division of vocational-technical education.* Unpublished doctoral dissertation, The Ohio State University, 1970.

Oldham, N. B. Croft Leadership Action Folio 78, a component of the administrator's service. *Educational planning.* Waterford, Conn.: 1975.

CHAPTER 8

IMPLEMENTATION OF THE PLANNING PROGRAM

Francis T. Tuttle and Charles O. Hopkins

This chapter on implementing the concepts of comprehensive planning is written from the standpoint of a state agency for vocational and technical education. The information reflects several years of experience in establishing and operating a planning division within a state department of vocational and technical education. However, the planning concepts presented may be applied at the local, state, or national level.

Formulation of Planning Responsibilities

An organization cannot function effectively if the planning process is fragmented. If the organization is functioning with each of the operating divisions doing its own planning without a clearly defined central direction, the result is chaos. Vocational education has grown to the point where planning must become an integral part of the operation and decision-making functions of the agency. It is no longer possible for top administration to direct all facets of the organization in accomplishing its mission without effective planning. The decisions that have to be made require the analysis of enormous amounts of information and consideration of all alternatives.

Location of the Planning Division

Planning has traditionally been a function performed by an administrator, but the amount of input that it takes to operate a state program of vocational education today requires the establishment of a specialized planning division which will enable the administration to make the right decisions. It must be able to justify the expenditures made from the revenue that is available for operating the program. The primary decision, then, is where planning responsibilities should fit into the organization. If planning is to be functional, it has to have input from top administration and it must directly support that level of management in the organization.

A planning division should not be set up to run the organization; it should provide decision makers with solution-oriented information and alternatives in order that sound decisions can be made. Ineffective planning is inevitable if the planning division is structurally placed in the organization at a level where communications do not flow freely between it and the top administration.

An agency establishing a planning division should determine and clearly set forth the objectives to be accomplished. Generally, planners should be responsible for presenting to the decision makers possible alternatives for their consideration in determining the overall direction that vocational education should take within the state.

Whether planning should be a staff or a line position is important to the organization. Placing planning personnel in a line position usually means that information passes up and down the organization in a hierarchical manner. This may be satisfactory if the planning responsibility is not buried too far down within the organizational structure. However, the line of communication often gets severed if the direction and input for planning has to flow through too many levels before it reaches the responsible person. Planning functions more satisfactorily when it is placed in a staff position directly under the top administration. This allows the planning division to get input and direction from top administration without being channeled through a chain of command which tends to obstruct the planning process. A staff position for planning also provides for direct and constant contact and accessibility between the planning division and top administration. A staff position for the planning division further allows the administration to communicate its involvement in planning activities to all other parts of the organization. This arrangement does not necessitate that all planning activities must flow up to the top administrator and then down to other sections within the organization. Further, a staff position for the planning division should remove it from any likely conflict with other parts of the organization which may occupy a similar lateral line position.

Responsibilities of the Planning Division

In addition to being strategically located in the organizational structure, the planning division—to be effective—must be assigned specific responsibilities. For instance, identification and analysis of information for statewide planning is a key responsibility of a planning division. Interpretation of federal and state legislation is also vitally important in determining what provisions have been made to support the agency from the different funding sources. Determination of suggested goals and objectives of the organization should come within the responsibility of planning. Identification of external agencies with which vocational education must coordinate and incorporation of vocational-technical plans with other human resource plans should also fall within the responsibility of planning.

Intra- as well as inter-agency coordination must be a prime responsibility of planning if it is to function as an effective process for the benefit of

200

administration and if it is to convey the plans that are made for the direction of the organization to the agencies within and outside vocational education for their guidance and use. Determining the innovative practices that should be incorporated into the overall agency plan also falls within the realm of responsibility of planning.

The planning division should be involved extensively in the identification of new and emerging occupations in order to meet the needs of business and industry. This requires continuous monitoring by the agency to enable it to keep abreast of important developments. The planning division should be responsible for the coordination and conveyance of all state agency plans to local institutions to ensure the type of training that is required to meet the statewide needs for manpower and human resources development.

Finally, perhaps the most important element of planning is the ability to determine the fiscal requirements necessary to complete the essential program plans, and to incorporate these fiscal requirements into a legislative program to gain the funds required for the effective operation of vocational education.

Orientation of Planning Personnel

Once the decision has been made to establish a comprehensive, systematic planning program as an integral part of the organization, the next step is to determine who should staff the planning division. It is important to secure individuals who have both vocational education knowledge and planning expertise. Planning personnel should be given an orientation to their specific responsibilities. It is extremely important at this point to indicate to these individuals that a basic purpose of planning within the organization is to provide to the decision makers the information required to give the organization proper direction.

Involvement of Other Groups

The boundaries within which planning is to function should be made clear to the personnel who are to staff the planning division. They should be oriented as to how they fit into the total operation of vocational education and to the importance of their responsibilities in working with other divisions in the organization. Involving other parts of the organization in the overall planning operation is essential because once decisions are made, these units will be more willing to share the responsibility of implementing the plans.

Mission of the Planning Unit

The planning staff should be aware that all of the suggested alternatives and plans presented to the administration may not be adopted. The planning personnel should not become easily discouraged when they do not see immediate fruits of their efforts. Again, the planning division should understand that its mission is not to develop ideas that top administration will be expected to implement, but rather to develop ideas and formulate them into a plan that will give the decision makers enough organized and manageable information to make sound decisions. If the facts indicate that changes need to take place within the organization, the planning personnel should present information (not opinions) and recommendations to the administration in order to try to initiate change.

Need for Open Communication

Planning personnel should be oriented to the necessity of constant communication between the decision-making body and the planning division. Another important element that planners should be aware of is that planning decisions often are not popular with certain operational divisions within the organization. If the planning division has the responsibility for making recommendations to the administration about changing specific elements within the organization or adopting new practices that affect divisions within the organization, resentment may be directed to the planning personnel.

It is extremely important that the planning process be open, shared, and freely discussed. When confidentiality is required, top administration should inform the planning personnel of that necessity. However, planners should recognize that decisions are accepted more readily when the planning process is open, i.e., when the people affected have been involved.

Mobilization of Other Planning Resources

It is virtually impossible for the personnel who staff the planning division to have all the expertise to develop the plans needed for state agency decision making. To establish an effective planning unit within the state agency, a variety of elements must be brought into the process.

Elements Needed to Support Planning

Perhaps the first essential element needed to assist in the planning process is the establishment of a good management information system. The implementation of a plan, once approved by the decision maker, is the responsibility of the other divisions within the organization. The divisions that will be affected must be identified and must provide an input into the development of the plans presented. In many instances, research is required to identify or confirm the necessary changes. This, in turn, necessitates communication with the division that has this responsibility.

If there is a demand for new jobs, this must be brought to the attention of the program operational division, or if a curriculum must be developed before a program can be implemented, this requires identification and presentation to the curriculum development division.

The Importance of Local Education Agency Plans

Local education agency plans are extremely important to the overall planning process established by the state vocational education agency. Plans from the local agency must be evaluated and incorporated into the plans of the state agency, since programs have to be implemented at the local level. Planners must know the intent of local education agencies and their financial abilities to implement the vocational programs needed to satisfy the requirements for state manpower and human resources development.

Others Involved in the Planning Process

Representatives of all institutions that train people for the labor market should be involved in the planning process and implementation of the completed plans. This includes representatives of agencies administering the Comprehensive Employment and Training Act (CETA), private schools, and institutions of higher education.

The Education Amendments of 1976 are specific in certain areas that are important to the operation of vocational education. The manner in which earmarked funds can be spent necessitates the involvement of certain resource personnel who are involved in the education of the identified target group. All aspects of the planning process have to be examined and their implications for other divisions within the organization, as well as groups external to the organization, must be identified. These plans then must be coordinated and incorporated in the plan developed for vocational education.

As statewide plans are developed for vocational education, a multitude of additional resources must be involved. They include certain designated personnel, agencies and organizations, other plans, and reports. This is brought about by federal legislative mandates, state statutes, agencies that are outside the jurisdiction of vocational education, and boards of vocational education. For example, the Education Amendments of 1976 (section 105) and the Comprehensive Employment and Training Act (section 107) mandate mutual consultation, involvement, and reporting by the respective agencies that are responsible for vocational education and CETA. Each agency is to have representation on the other's state advisory council, and the two groups are required to consult with one another on the development of their respective state plans and accountability reports. The basic purpose of this involvement is to ensure a consistent, integrated, and coordinated approach to providing vocational education and manpower services based on the needs of the people within each state.

It is extremely difficult to get the plan administered or to have it accepted as a statewide program unless these agencies and individuals are involved in the planning process. The best method to mobilize the external resources needed for the planning process is to involve the individual or agency responsible for administering the resources identified.

Upon encountering any element external to the agency that impacts on the planning function, planners should have the responsibility for making operational contact with the external resources as needed. However, some instances may exist when someone other than a planning division staff member is needed to mobilize the required inputs. In this case, the planning staff is responsible for identifying the needed input, identifying who can best obtain that input, and informing the administration of its needs.

Organizing the Resources Needed

The planning division usually has very limited authority to convey to other divisions within the organization the resources needed. It is then the responsibility of top administration to organize the resources that are needed for the planning process. Additionally, the administration may be required to initially contact and ask organizations external to vocational education for input.

It is difficult to separate planning from administration. They must work closely together. The responsibility of the planning process is to develop the actual plans, but priorities must be determined by top administration. It also becomes the responsibility of top administration to inform the resource suppliers of the priority that has been set for providing the identified resources. Such decisions often require that financial resources be allocated to the other divisions within the organization so they can provide the input needed to develop the plans required for the statewide operation of vocational education.

Initiation of Planning Activities

The administration should determine those activities that will be carried out through the planning process. This is best accomplished at the beginning of the fiscal year when the organization develops its goals and objectives for program operation during the year ahead. The decisions that are made should include short-term as well as long-term planning activities.

Process for Determining Planning Activities

The planning activities to be carried out should be discussed between the administration and the planning division in order to determine workload priorities for the designated time frame. This process allows the administration to provide the leadership needed to determine the priorities for all units within the organization where activities will be carried out. It further allows the personnel in the planning division to interact with the top administration and convey their ideas as to whether it is possible for the goals and objectives that have been established for the divisions to be accomplished within the specified time frame. Upon mutual consent between the director of the planning division and top administration, a commitment is made regarding the activities that are to be carried out by the planning division.

Upon completion of this negotiation process, it is the responsibility of top administration to communicate the goals and objectives pertaining to planning to all affected divisions within the organization. The other operational divisions can then have input to the administration in determining the commitment that they will have to make to accomplish the activities required by the plan.

Adjusting Priorities to Meet New Needs

The possibility exists that not all of the activities which will be required of the planning division can be identified at the beginning of the planning cycle. As new needs arise that require the attention of the planning division, the administration has a responsibility for making specific assignments to the division and establishing priorities between new assignments and current activities the planning division is carrying out. A proper flow of communications is central to planning and to the implementation of plans.

It is important at this time to identify the priority status of the planning activities that have been assigned to the other operational divisions. The planning division cannot meet its time frames if other divisions within the organization place a low priority on an activity designated as a high priority by the planning division. Therefore, agreement on priorities and time frames for planning activities must be established at every level of the organization by the operational division that will be involved. The administration will monitor the implementation of these planning activities according to the agreed-on commitments.

Monitoring the Ongoing Planning Program

Need for a Monitoring Component

Every organization needs a system for managing its operations. An important component of such a system is a monitoring component designed to allow administrators at every level to review the planned accomplishments against the actual accomplishments of each operational unit within the organization. The same process used in a management system is recommended for monitoring planning activities. This process should be formally designed with a system of reporting the activities being carried out by the planning division within a given time frame.

The Review Process

This process could consist of brief, written monthly reports to alert the administration as to where problem areas have been encountered in carrying out the planning activities. There should also be a formal quarterly status report given orally in which the top administrator and the director of the planning unit review the accomplishments during that quarter. The purposes of this review are to: (a) discuss any new developments that relate to the planning program, (b) reexamine the priorities that have been set for planning activities, and (c) make necessary adjustments on activities and time frames resulting from new information or new developments. As problems are identified, the planning division should convey to the administration the additional decisions or input necessary for the planning activities to be carried out.

Evaluation of Accomplishments

The review and monitoring system can be used not only to identify problem areas, but to examine the workload of the planning division, to evaluate accomplishments, and to ascertain if additional activities need to be initiated. Problems which have been encountered and communicated to the administration through this process are no longer just the problems of the planning division; they have become the problems of administration. This allows top administration to convey new priorities to all units of the organization.

Without a good monitoring system, an organization has difficulty in measuring the progress that its operational divisions have made within a given time frame. A good monitoring system allows the administrator and the director of the planning division to examine the progress that has been made in terms of the priorities that were established by the organization.

Production of Plans for Action

Kinds of Plans Needed

A state organization will likely have a series of documents that make up its total plan for the operation of vocational education. Plans can be developed around the concept that they are compliance documents for receiving federal funds. In addition, state statutes may require the development of a plan to account for the state funds for vocational education programs.

In order to gain additional funds or to receive a contract, divisions within the organization may also need to develop specific plans. The plan for attaining the goals and objectives of the organization probably represents the most detailed operational plan that an organization has to administer. Time frames for program operation by different calendar requirements necessitate the development of different kinds of plans.

Distribution of Plans

Provision should be made for the distribution of copies of the plan to concerned parties. The federal compliance documents and the state plan for vocational and technical education must be reproduced and distributed in order to communicate planned action to the general public and to the agencies which have been identified as a part of the coordinated effort to carry out a total program of vocational education. The long-term and short-term goals and objectives of an organization must be distributed to every component of the organization.

Some of the documents developed within the planning process are internal documents that do not require extensive circulation throughout the organization. Regardless of the kind of document developed, the parts that interrelate should be cohesive and incorporated into the documents that are distributed. Every eligible recipient for funds dispersed by state organizations of vocational education should have access to the priorities and directions that have been determined by that agency for the vocational education programs within the state.

Upon completion of a plan, the responsibility of distribution then becomes a key element for planning and administration. A plan should be flexible at the time it is conveyed, recognizing that it was based upon the best information available at a certain time; as other elements review the plan, revisions may be necessary.

Planning as a Continuing Process

Planning is an ongoing process. A plan evolves much as the organization evolves, building upon what is known, while providing a mechanism for incorporating what is unknown now but may be known later. A plan provides the overall direction, including intermediate goals, but not necessarily the step-by-step road map to be utilized in reaching the final destination.

Internal and external factors will continue to influence change [illegible] any organizational plan or planning process. One of the greatest obstacles that has faced vocational education has been the inability of the organization to convey to the public what vocational education is and what it does. Through planning, a vehicle may be provided to communicate to the general public the planned activities of the organization.

Selected References

California community colleges 5-year plan, 1976-1981. (ERIC Document Reproduction Service No. ED 128 153)

Michael, E. J., and Norris, D. (Eds.). *Postsecondary planning methodologies: Consultants report to the Georgia postsecondary education commission.* Atlanta: Postsecondary Education Commission, 1975. (ERIC Document Reproduction Service No. ED 132 893)

Martorano, S. V., and McGuire, W. (Eds.). *Regionalism and statewide coordination of postsecondary education, Report no. 26.* University Park: Pennsylvania State University, 1976. (ERIC Document Reproduction Service No. ED 131 819)

Meisinger, R., Jr. (Ed.). *State budgeting for higher education: The uses of formulas.* Berkeley: University of California at Berkeley, 1976. (ERIC Document Reproduction Service No. 132 963)

Millard, R. (Ed.). *State boards of higher education. ERIC higher education research report no. 4.* Washington, D.C.: George Washington University, 1976. (ERIC Document Reproduction Service No. ED 129 196)

Purves, R., and Glenny, L. (Eds.). *State budgeting for higher education: Information systems and technical analyses.* Berkeley: University of California at Berkeley, 1976. (ERIC Document Reproduction Service No. ED 134 114)

Smith, M. (Ed.). *Missouri public junior college study. Final report.* Jefferson City: Missouri Commission on Higher Education, July 1968. (ERIC Document Reproduction Service No. ED 134 245)

Woodruff, A. (Ed.). *State and local responsibilities for planning occupational education. A study of the effect of alternative allocations of responsibilities on the process of planning: A report.* New York: Educational Facilities, 1976. (ERIC Document Reproduction Service No. ED 133 479)

CHAPTER 9
A SURVEY OF PLANNING TECHNIQUES

Kenneth W. Brooks, Carolyn G. Litchfield and Gary Q. Green

In preceding chapters various aspects of the nature and process of comprehensive planning in vocational education have been reviewed. Throughout these chapters, specific techniques to accomplish objectives within the planning process have been deliberately deemphasized. There are two reasons for the limited treatment of planning techniques thus far. First, the techniques cut across the entire process of planning and it would be redundant to discuss them at every possible point of implementation. Second, describing the technique at the same time as the planning process is explained would detract from the process description and might limit understanding.

It should be noted at the outset that the formulation of certain planning techniques is one of several factors that have accounted for the recent growth of planning. This is not surprising since the techniques have allowed the planning process to be accomplished in more effective and efficient ways. Without these techniques, planning would have remained at an unsophisticated and simplistic level of development.

Planning Techniques and System Analysis

Virtually all planning techniques are founded on the basic concepts of system analysis. System analysis is best viewed as an orientation or mode of operation. The *system* in system analysis refers to any entity, physical or conceptual, that is composed of interrelated parts. This broad definition could refer to an automobile, computer, community, or vocational school. A system has a structural configuration or recognizable arrangement of components, performs certain functions, operates in a larger environment, or is a subsystem of a larger system. It follows some definable process or procedure, and produces outputs that create feedback for the system. *Analysis* in system analysis refers to investigation or examination, and is derived from a Greek word which means "breaking down in search of relationships."

System analysis, then, is the separation of a system into its component subsystems in order to examine their relationships to one another and to the system as a whole. System analysis is a deductive approach to problem solving. Its major value is to organize human thinking within a rational framework.

System analysis as a mode of operation has been employed for years in the natural sciences such as physics, chemistry, and biology. These are, however, closed systems and processes that reach an equilibrium. Inputs and outputs are balanced. More recently, system analysis has been applied to open systems which do not function in the same way. An equilibrium in the chemical or thermodynamic sense is never reached since open systems interact constantly and cannot be separated from their environment. The planning techniques spawned by the system analysis perspective are numerous. Several of these have been successfully utilized as part of comprehensive planning in education as a whole, and specifically in vocational education. The remainder of this chapter will describe three of these techniques in some detail and provide an overview of several others.

The Delphi Technique

Method of Forecasting

The Delphi technique refers to a series of related procedures for eliciting and refining the opinions of a group of people. Named for the Oracle at Delphi in ancient Greece, the Delphi technique was developed in the 1950s by the Rand Corporation as an intuitive methodology for organizing and shaping forecasts. Confronted with a near-vacuum in their search for methods for forecasting long-range trends with their probable effects, Olaf Helmer and Rand colleagues designed the Delphi technique. They employed the Delphi as a means of obtaining opinions concerning urgent defense problems. Since its initial use, this technique has become one of the better known methods for studying the future.

Generally, the Delphi has been used for forecasting and, in situations where it is appropriate, for gathering a consensus of experts. It has been used to obtain group judgments on factual matters when precise information was not available. Value judgments for which information is based on opinion have also been obtained through the Delphi. It has been employed in military, business, industrial, and educational settings.

The Delphi Process

The Delphi process technique utilizes a sequence of questionnaires to derive information from a group of experts on an anonymous basis and feed it back to the group. Feedback is used to get people to reconsider or defend their beliefs in order to bring about group consensus. Consensus is defined as the median of the responses in the final round.

The following steps are involved in a Delphi study:

1. A panel of experts (who usually remain anonymous to one another) is selected.

2. Each expert is asked to respond to an initial questionnaire and to make independent judgments regarding the topic at hand.

3 The investigator receives and clarifies the statements and develops a second questionnaire. This questionnaire contains both the items about which opinions are desired and a statistical summary (median and interquartile range) of the distribution of responses previously obtained.

4. Through the second questionnaire, experts receive the refined list of responses and the statistical summary. If the expert's view varies from the majority of the responses, the expert is asked to either revise his or her opinion or to indicate a reason for not doing so.

5. The investigator receives responses to the second questionnaire and further clarifies and summarizes all responses.

6. Each expert receives this second clarification and statistical summary through the third questionnaire. Minority opinions are also included and experts are given another opportunity to revise their opinions.

7. These statements are received and clarified by the investigator.

8. Experts receive a further refined list with both a statistical summary and a summary of opinions. Experts are given a final opportunity to revise their opinions.

9. The last round of questionnaires is summarized into a final report by the investigator.

Modifications in basic Delphi procedures have been introduced as the technique has increased in popularity. Variations exist in both the participants and procedures used. Interrelationships between purpose, participants, and procedures make it difficult, if not impossible, to recommend an optimal structure for the Delphi study. Because the Delphi technique is flexible in presentation and function, the operational design of the study can be arranged according to the purpose of the investigation and the nature of the participants. Individuals designing Delphi studies should carefully consider the participant and procedural variables of their investigation.

Choosing a Panel of Experts

In order to obtain outcomes which represent the pattern of thought in the field, Delphi studies need a sufficient number of representative experts. To date, no optimal number of panel members has been proposed, and the number of experts used varies with the nature of the problem investigated. Anderson (1970) suggested that handling data is cumbersome when the number of experts exceeds 25 to 30.

The characteristics of panel members are of particular importance in a Delphi study. The Delphi technique is most frequently used to obtain consensus among experts, and one of the problems encountered has been identifying the expert group. Helmer (1966) describes experts in terms of their professional experience, publications, and status among peers. These experts should be competent individuals who will give carefully considered judgments to repeated questionnaires.

Development and Use of the Delphi Instrument

Another important consideration in a Delphi study is the development of the questionnaire. This can become a dilemma because questions must be relevant, and they need to be presented in a manner that the panel of experts can understand. The initial questionnaire may be open-ended or require specifically set responses. Either way, the items on the questionnaire are to generate information germane to the purpose of the study. Generally, literature regarding Delphi studies does not mention item analysis or field testing of the instruments used. Individuals who do not understand items on an initial questionnaire may respond with the majority on subsequent rounds. However, the possibility also exists that researchers will obtain information on the basis of faulty questionnaire items.

Another issue is how many times the questionnaire should be administered. Cyphert and Grant (1971) found that 99 percent of the respondents had reached their opinion by the third round. Through studies conducted at the Rand Corporation, researchers found that the major part of convergence occurs between the first and second rounds. Some individuals contend that three rounds are appropriate.

Advantages and Disadvantages of the Delphi

Advantages of the Delphi technique have been well documented. One of the major advantages is the ability to obtain group responses without assembling individuals in a face-to-face situation. This factor saves considerable expense. Experts from widely spaced geographical areas can participate in the process, probably with less time and effort than by preparing a paper or participating in a meeting.

The Delphi technique reduces certain psychological factors which may occur when groups convene for decision making. These factors include the dominance of individuals with noted reputations and the ability of some individuals to speak more eloquently and convincingly than others. Through the Delphi, everyone's voice can be heard. Minority and majority opinions have equal opportunity for expression in an uninhibited situation. The statistical definition of response reduces pressure for conformity.

Dalkey (1972) indicated that the Delphi has been used to "cream the tops of the heads" of a panel of experts. Delphi researchers are working with the idea that two heads are better than one. In addition, two or more individuals working together can produce more than the sum of the same persons working separately. Yet when the Delphi is used, no training or team building is necessary in order to develop good working relationships. The techniques of anonymous response and controlled feedback are definite benefits of the Delphi. Controlled feedback reduces noise and causes participants to remain focussed on issues.

Data processing equipment and computer programs have been used with large Delphi studies. In some instances, it has proved beneficial to bring the panel of experts on-line to a computer program. However, the technique can be used quite effectively without computer assistance.

The Delphi technique is not without limitations. One of the major limitations is time. First, participants must be willing to devote a substantial amount of time to respond to the questionnaire. Another factor is the time required between rounds for the researcher to analyze responses and prepare feedback data. In addition, there is the time lapse required for mailings.

Sometimes participants neglect to respond to Delphi rounds due to loss of interest resulting from a long time span between rounds. This may also cause the quality of responses to decrease. Delphi researchers make an assumption that there is no significant difference between respondents and individuals who fail to complete the first or subsequent rounds of the questionnaire.

Other limitations include the difficulties of communicating via mail, possible distortions due to the selection of participants, plus lack of assurance that a particular criterion or consensus will be reached. Additional limitations may be imposed based on the nature of the individual study and participants.

Applications of Delphi

Vocational educators and others have used Delphi in a variety of ways. No doubt, other worthwhile applications exist and are yet to be tried. The following discussion reports some recent applications and suggests some new ones. The treatment should be viewed as illustrative of the possibilities rather than exhaustive.

Projecting Future Trends

One major use of Delphi has been to project future trends to avoid what Toffler (1970) has called "future shock." Starkweather (1975) used the technique to determine potential directions for industrial arts, and Marshall (1973) reported use of the Delphi to determine information regarding the future of home economics. The Delphi can be helpful as a forecasting probe to individuals who wish to identify future directions for vocational education, career education, or specific programs. It could also be utilized to project trends that may impinge upon vocational education; for example, Delphi could forecast future societal views of public schooling, willingness of the public to financially support education, or the relationship of man and work.

Identifying Needs and Competencies

A second major use of Delphi has been to identify required professional competencies or training, and inservice or research needs. Gray (1970) used the technique to identify competencies needed by individuals involved in program planning in state divisions of vocational education. Burrow and Groneman (1976) employed it to identify the teaching competencies that vocational educators might develop through occupational experience. It could also be utilized to efficiently gather the input of business leaders concerning the competencies necessary for specific occupations. Delphi has been used to establish critical research needs in education of the exceptional child and middle school education. It could be effective in a parallel application within the vocational education field. The technique is currently being utilized to determine the inservice needs of teachers in a school district. The same approach could be employed with a vocational staff. Uses of this type, aimed at determining needs or competencies, are considered to be a preference or perception probe.

Appraisal

The Delphi has been used as an alternative method of appraisal. Cochran, Crumley, and Overby (1970) employed the technique in teacher evaluation. The process could also be used in evaluating administrators and counselors, and has implications for program evaluation. The Delphi technique has been applied to validate evaluative standards and criteria for distributive teacher education. The technique has been used in eastern Kentucky to gather the reactions and evaluations by participants of a federally funded project. The use of the technique for evaluative or appraisal purposes is generally desirable whenever more precise, objective data is not available or when hard data can be profitably augmented by subjective assessments.

Gathering Perceptions

The Delphi technique has been used to gather perceptions regarding an existing situation. Brooks (1972) employed the technique to determine the characteristics of successful vocational education programs. Espinoza (1971) identified the needs for organizational development for vocational education in Kentucky, and Baratte (1974) assessed the perceptions of five groups regarding the importance of evaluative criteria in vocational education. Later, Corbin and Eggland (1976) employed the technique to identify the role of the collegiate division of the Distributive Education Clubs of America (DECA). Along similar lines, the technique could be utilized to identify overlapping services related to multi-agency concerns in vocational education on manpower training at the federal, state, or local level. Similarly, the roles of individuals in vocational education could be examined and delineated, such as the role of the chief state school officer for vocational education or the role of the local school district vocational education coordinator. Even more generally, Delphi could be used to clarify the role of certain aspects of vocational education like agricultural mechanics.

Establishing Organizational Goals

While these past and potential uses are related to such tasks as data gathering in planning, the Delphi technique has some direct applications to planning per se. Extensive use of the technique has been made to establish a prioritized listing of organizational goals, and even an assessment of goal attainment. The tool has been effective in program planning at the building, district, or state level. Gray (1972) recommended the use of the Delphi as a planning tool for vocational education teachers at the local program level. The technique was used by Corbin (1975) to identify the goals and objectives of the high school division of DECA. Phi Delta Kappa, a professional honorary society in education, has developed and packaged for distribution a process for setting school district goals that uses a derivation of Delphi. Clearly, a viable and useful application is in the setting of goals and objectives at any level of vocational planning.

Assessing Alternative Planning Strategies

Once goals and objectives are established, it may be possible to use Delphi to assess alternative planning strategies. Several strengths of the technique, such as the avoidance of face-to-face confrontations and the flexible nature of its timing, would be quite beneficial in such strategy probes. The possible applications of this type are almost unlimited. Alternative strategies to meet mandated programs, various possible future program features, or anticipated changes in learner needs could be estimated. Rather than using Delphi to develop alternative planning strategies, the technique could also be used effectively to reach a consensus about a strategy to be implemented nationally, statewide, locally, or on an even smaller scale. Professional organizations might use the technique to poll the opinions of members to support planning for the future of the organization. Rather than being used to generate or test strategies and achieve consensus, Delphi might be used to simply formulate, almost in a brainstorming sense, possible planning strategies. The Delphi has been applied to the problem of budgeting in the development of weighted sets of operational objectives and to budgetary considerations in cost-benefit studies. In these and other ways, the technique can be utilized effectively to generate and test alternative strategies, or components of strategies, within the planning process. Such data would be valuable in building a case for plan adoption.

Gathering Community Input

A last general category of Delphi application to be identified here is the use of the technique to gather community input. While the values of community input into planning are widely recognized, few concrete suggestions exist on how to efficiently gather and aggregate such input. Delphi could be used to determine community feelings and establish some consensus about program needs, relationship of vocational education to other programs, inadequacies of present programs, or future vocational education needs. By encouraging consensus, the technique attacks the problem of advisory committees becoming inhibited by their lack of agreement on basic issues. Uses with community groups, while largely untested, would appear to be a viable approach.

Summary

The Delphi technique is applicable when decisions need to be based on informed judgment. The extent to which it is capable of outright decision making is a function of the identity of the participants rather than the technique itself. With a careful design, the Delphi technique can be adapted to fulfill the needs of a number of quite specialized functions in educational planning. While it is not a panacea for all problems in the planning process, it offers a strong alternative to conventional forms of participation in planning.

The Advocate Team Process

The advocate team process, unlike Delphi, is relatively new and has had limited application. When utilized, it has proven very effective. The technique is employed to generate alternative programs for achieving a given set of objectives. The first documented application was in Austin, Texas, by the Southwest Educational Development Laboratory in 1968. The laboratory used the advocate team process to formulate alternative programs for meeting the needs of migrant students. Essentially, the technique involves the selection of several teams which are then assigned a topic on which they advocate a consensual position. The end result is a number of strategies created for reaching a predetermined set of objectives.

Several elements seem critical to the advocate team process. Failure to deal successfully with any of the eight facets that follow will seriously impair the effectiveness of the process.

Identifying the Task

First, the task to be achieved must be identified. It is crucial that the objectives to be met by the advocate teams be delineated clearly. If the objectives are straightforward and understood, attention can be focussed on strategy development, the purpose of advocate teams. On the other hand, if expected outcomes are not understood, this becomes a major concern of the team. In addition, if the objectives are not comprehended by participants, the strategies developed may not be usable. While careful identification of the task may not ensure success, failure to adequately define the task will preclude success.

Selecting Participants

A second element in the advocate team process is selecting participants. It is best to begin the selection process by identifying the criteria to be used. Two differing approaches can be utilized. Team members can be chosen to maximize homogeneity or heterogeneity of expertise and anticipated inputs. Homogeneously oriented teams assure dissimilarity of problem solutions. Homogeneous teams require that a limited number of basic philosophical, or theoretical, positions be clearly defined in order that teams composed of individuals of like bent, representing each basic stance, be formed. It seems that such teams also require very strong leadership to be maximally productive. Heterogeneous teams do not guarantee a variety of strategies; however, experience with the process indicates that common solutions are unlikely when safeguards are used to prevent inter-team contamination.

In addition to these team selection principles, other individual characteristics are important in selecting advocate team participants. Each team member should be: knowledgeable about specific subject matter, willing to express ideas without dominance, able to think innovatively, flexible, confident, task oriented, objective, and available to participate. Although the difficulty of finding participants who meet all of these qualifications is almost insurmountable, it is helpful to keep them in mind during the personnel selection process.

Besides regular team members, a chairperson is required for each advocate team. The role of the chairperson is to coordinate and guide the team as it deliberates. This does not mean that he or she should dominate the discussions and the activities. Rather, the chairperson must tactfully lead the group in case of conflict and seek a position that the group can advocate. In addition to possessing the characteristics that are desirable for other committee members, the committee chairperson should be knowledgeable and skillful in group dynamics, able to set directions, willing to involve the total group even if it means curbing some participants, able to ask provocative questions, and skillful at clarifying and synthesizing divergent ideas.

A final issue related to participants is the size of advocate teams. Generally, a range of four to six persons seems to work effectively. This allows division into smaller groupings for some tasks, and yet manageability is maintained in total group efforts. A related issue is the number of teams. Since the objective is to advocate alternative solutions, at least two teams must be included. More than four teams make the technique costly and difficult to implement.

Timing and Location of the Sessions

A third major concern is the time involved in team sessions. In past applications it has varied from as short as two days to as long as one week. The time must be adjusted to the magnitude of the task. In a number of evaluations of the advocate team process a frequent criticism is the lack of sufficient time. Too little time prevents a team from doing its best job, while too much time is wasteful of resources and may prevent some individuals from participating.

A fourth factor in the advocate team technique is the site and facilities for team meetings. In order to maximize effectiveness and creativity, it is desirable that participants of different teams not have contact with one another during the advocate team process, thus avoiding the spread of ideas from one team to another. In order to achieve this, advocate team sessions may be conducted at the same time in facilities on different sites. Meeting at the same time also has the advantage of cutting down the total time frame for the process. Simultaneous meetings have the disadvantage of requiring a larger number of support personnel such as technical writers, secretaries, and background resource people. Because the task, by nature, involves intensive and concentrated effort, it is desirable that the facilities themselves be as comfortable as possible. Both the sleeping rooms and the meeting rooms should be designed and arranged in a way that allows the team maximum flexibility and physical comfort. Poor facilities will reduce team effectiveness.

Preparing Participants

A fifth factor is the background preparation of participants prior to team meetings. Some preparation is essential for the advocate team sessions to be successful. This preparation can be accomplished in several ways. One approach is to provide the participants with written information to study before the advocate team sessions. An alternative approach is to bring the participants together for an orientation session, at which time background materials are presented and discussed.

Both approaches have advantages. The provision of written material is both expedient and relatively inexpensive. In addition, this allows team members to digest background data. The obvious disadvantage is that there is no assurance a team participant will take the time and effort to examine the materials. The orientation session, while more expensive, does ensure at least some minimal awareness of the information by all team participants. In any case, preparation prior to advocate team meetings is essential if maximum productivity is to be achieved during the meeting times.

Another consideration is that a team member cannot be presented all of the data that is available on most topics, and some selection must be made. The process of deciding which materials to make available is crucial.

Too little background data will result in inordinate confusion about existing conditions, while too much data will suffocate creative thought. Some specific issues to be addressed in the background materials are:

1. *Charge for the advocate team*—this should include a specific statement of the task the team is to accomplish.
2. *Constraints*—any constraints imposed on the possible solutions should be clearly delineated for all teams.
3. *Solution specifications*—the format expected for the strategy proposed should be specified and provide sufficient flexibility to allow originality.

In addition, it will be desirable in most applications to inform participants about what has gone on before and what is to be done following the advocate team sessions. Participants will be especially interested in how the team product will be utilized.

Functioning of the Teams

A sixth element in using advocate teams is the team sessions themselves. The nature of the actual advocate team sessions is dependent largely upon the specificity of the charge given to them, the allotted time, and the characteristics of team members, especially the chairperson. Given the same task and time allotment, teams function in different ways. Some teams seem to require more time just learning to know each other and establishing their own ground rules before they can give serious consideration to their assigned task. Some teams profitably spend considerable time planning how they are going to use their allotted time and then stick rigorously to their schedule. Some teams spend almost all of their assigned time together as a single group, while others break into subgroups or undertake activities individually. Some teams work better early in the morning, while others do better working after dinner. While the team chairperson is responsible for keeping the team concentrating on its task, it is interesting to note that most team members are highly task oriented under the advocate team setting. The functioning of the team, the specific schedule on which the team functions, and the use made of the various resources available are decisions which should be left to the team participants.

Using Technical Writers

Technical writers, a seventh element in the process, should be provided for each advocate team. These persons record the important points raised at each session. At the close of the session, the notes should be rearranged by topic, typed, and returned to the team as quickly as possible. Thus, a team is provided with an ongoing account of its deliberations. It is important that the technical writers be considered primarily as group facilitators and not participate actively in team discussions. However, it is appropriate that technical writers ask questions for clarification or feed back information from earlier sessions which may be in conflict with current discussion. One workable approach is to assign two technical writers to each team. They can then work in shifts, with one taking notes while the other prepares notes from the earlier session. Each technical writer may profit from some specialized training, including the simulation of a team session. Evaluations by technical writers rated this training as highly significant.

Writing a Final Report

The final element of the process is a written report by each advocate team. Some general guidelines for the report should be established and shared as part of the background data before the sessions. The usual procedure is for the chairperson, at the end of the session, to prepare a preliminary draft of the advocate team's strategy, based on personal perceptions and notes taken by technical writers. This draft is circulated to all team members for evaluation and critique. Given this new input, the chairperson can prepare a final report.

Defining the Technique

In summary, the advocate team process is a technique that attempts to take the tendency of people to advocate a position and use it to the fullest extent. In essence, several small groups of individuals are assembled for intensive work, and each group is asked to advocate a strategy for achieving given objectives. The possible applications are unlimited.

Strengths and Weaknesses of the Technique

The advocate team process has several potential strengths and weaknesses. Its primary benefit is in the utilization of resources simultaneously to develop several alternative strategies. The total time involved is minimal as compared to other approaches for strategy development.

In addition to time, another advantage to the technique is that an array of individuals participate, encouraging creative and diverse thinking. It is difficult for an individual to outline in detail alternative strategies without having a personal favorite emerge. With this technique each team can identify a favorite and then move to describe it. The technique is based on the natural tendency of persons to select and advocate a single position. Divergent thinking seems to occur naturally among teams without encouragement.

The technique is not necessary where acceptable alternative strategies already exist. There may be no need to generate additional approaches for achieving the objectives if acceptable alternatives exist and can simply be evaluated to determine the most appropriate one to use. Advocate teams are best utilized when a search for available alternatives has failed to identify a satisfactory strategy.

A major limitation on the technique may be its costs. The process could be used without external funds if an organization wished to use existing staff; however, it seems desirable to utilize outside expertise. Such expertise may consume a considerable amount of resources. For example, if average sized teams were used, four participants per team would be needed. With three teams, a total of 12 individuals would be included. If teams met for four days with one day of preparation and one day for post-session report writing, a total of 72 consultant days would have been consumed. In addition, technical writers, secretaries, and facilities must be provided. While the costs may be significant, the technique may be no more expensive than any other approach to strategy development.

Based on evaluation of previous applications of the technique, it can be concluded that the approach is workable and has produced the desired strategies. The keys to success seem to be selection of participants and the delineation of the task for the team. If these two facets of the process can be accomplished adequately, then the expected outcomes should be possible.

Potential Applications in Planning

As with many planning techniques, the potental applications are numerous. In comprehensive planning, the primary application would likely be in the development of alternative strategies to achieve organizational goals. Once the goals of the system, context data, and any constraints on the plan were established, then the advocate team process could be employed to produce several alternative strategies for goal achievement. This could be done for a vocational school, a school system, or even a state plan for vocational education.

The technique could be used to develop components of a comprehensive plan. For example, if personnel development is to be a part of a comprehensive plan for the vocational education program to serve a school district need, advocate teams could be used to generate alternative programs for personnel development.

The process could be used to generate alternative training strategies with a program element. For example, a need in the years ahead may be operators of sophisticated high-speed mass transit equipment. Such operators will require specialized training. The advocate team process could be used to develop alternative training strategies.

In short, the technique can be used when alternative strategies need to be developed. Within comprehensive planning, alternative strategy formulation is a continual and important activity.

Example of an Application

The advocate team process has had few applications as yet. It was first utilized, as noted earlier, in the development of alternative educational programs for migrant students in the southwest. It has also been used to develop alternative training programs for educational evaluators and to develop alternative planning and assessment systems for a federal agency. One of the most significant applications was in a project to replan education for gifted children in the state of Illinois.

This project was directed by the Ohio State University's Faculty of Educational Administration. The state of Illinois had funded programs related to gifted education for a number of years. The project was aimed at planning the immediate future of gifted education at the state level. Advocate teams were used for two purposes within the project. The first set of advocate teams was used to generate, almost in a brainstorming sense, ways in which local school districts could address gifted education. Three advocate teams were utilized, each functioning for about two and a half days.

The second use of advocate teams in the project was to develop alternative state plans for gifted education. The local program options produced by the first set of teams were input data for the second set of teams. The second set of teams worked for about three and a half days.

In both incidences a diversity of backgrounds was sought in the participants. All participants were selected by the project director, based on the recommendations of others. In both applications, the teams were housed in three hotels in the same city. Written materials and an orientation session were used to provide the needed background. To avoid the danger of too much data, the background materials were deliberately brief. During all team sessions, resource people were available to add any additional data requested. Technical writers and typists were available continuously to each team, ensuring that notes of sessions were quickly available.

At the conclusion of the team sessions, each team chairperson prepared a draft report and circulated it to team members for review. A final report was then developed. In this project, the project staff used the second set of advocate team reports as input data and synthesized a plan, first, of local program options and, second, of gifted education for the state, pulling the best ideas and concepts from each report.

Evaluations by participants, resource staff, support staff, and project staff were positive. No changes in the basic approach were suggested. As in the case of the replanning of gifted education in Illinois, the advocate team process can be utilized effectively to formulate alternative strategies. With proper implementation it can be a useful planning technique.

The Program Evaluation and Review Technique

Although the Program Evaluation and Review Technique (PERT) and similar devices, such as the Critical Path Method (CPM), have been commonly accepted tools for some time, educators continue to talk about them but seldom use them. This pattern appears to be one of a long line of classical examples wherein educators make extremely simple, useful ideas into unwieldy, unusable, and feared techniques. PERT is basically a process for the planning and management of any project. In its simplest form, PERT is the graphic ordering of events into a logical sequence with the addition of carefully computed time estimates for each activity.

As reported by Tanner (1973), PERT was introduced cooperatively by the Navy Special Projects Office; Booz, Allen, and Hamilton (a Chicago consulting firm); and Lockheed Aircraft Corporation. The technique was successfully applied in the Polaris missile program and the Saturn rocket project. In the Saturn project, Chrysler Corporation used the technique to manage the coordination of more than eight thousand component events. Numerous other businesses and educational institutions have used this technique and have proved its worth as a versatile management tool. While these historical illustrations are rather glamorous, the technique is equally useful on a smaller scale.

Five Steps in the Process of PERT

PERTing requires five discrete, linear steps. While illustrations included here are simplistic to encourage understanding, the process remains the same even with complex projects.

1. *Project definition and work breakdown.* The first step is typically labeled project definition and work breakdown. In this step, the project is defined and major components are identified. The first activity in project definition is the development of a project mission statement. The statement must identify clearly the end product if one exists, and indicate the time constraint. The next activity in project definition is subdivision of the mission statement into component parts, and then reduction of the subdivision into still smaller parts, and so on until the desired level of specificity is reached. As with the mission statement, each level should be stated as an end product.

A project definition and work breakdown is illustrated in Table 14. The project consists of constructing a vocational high school. The first activity in project definition would be to define the mission statement—in this case, to plan, design, and build a vocational high school for 300 students by September 1982. This statement identifies the end product (i.e., building a vocational high school for 300 students) and the time constraint (i.e., by September 1982).

The next activity in project definition is to divide the mission statement

Table 14
EXAMPLE OF A PROJECT BREAKDOWN: CONSTRUCTION OF A VOCATIONAL HIGH SCHOOL

Mission statement

To plan, design, and build a vocational high school for 300 students and occupy it by September 1982.

Completion of facility plan

Formal acceptance of a study documenting the desirability of the facility
Determination of need
Identification of resources
Development of a plan calling for the school

Presentation of educational specifications to architect

Identification of basic program philosophy
Determination of individual programs
Development of specifications by program and for general coordinative spaces
Component N

into component parts. In order to construct a vocational high school, a facility plan must be completed, educational specifications must be presented to an architect and a series of other items must be completed. Each part should then be subdivided into smaller tasks. For example, the facility plan will be complete when these items have been accomplished: (1) formal acceptance of a study documenting the desirability of the facility, (2) determination of need, (3) identification of resources, and (4) development of a plan calling for the school. Each of these parts is stated as an end product.

The project definition is a key task. It is very similar to the technique called Gantt charts. The problem with both techniques is that the relationship between components, and of each component to time and resources, is difficult to express.

2. *Flow chart or network*. The second activity in PERTing is the conversion of the work breakdown to a flow chart or network. The most efficient way to describe network analysis is with an example (see Figure 7). There are four basic concepts of network analysis fundamental to understanding the technique. The first concept is the *network*. The network is a graphic representation of all tasks necessary to accomplish the goals of the project. It shows the planned sequence of accomplishments and the interrelationships of the tasks. Flow is always unidirectional from left to right. A network may be very simple, as shown in Figure 7, or very complex, with hundreds of tasks.

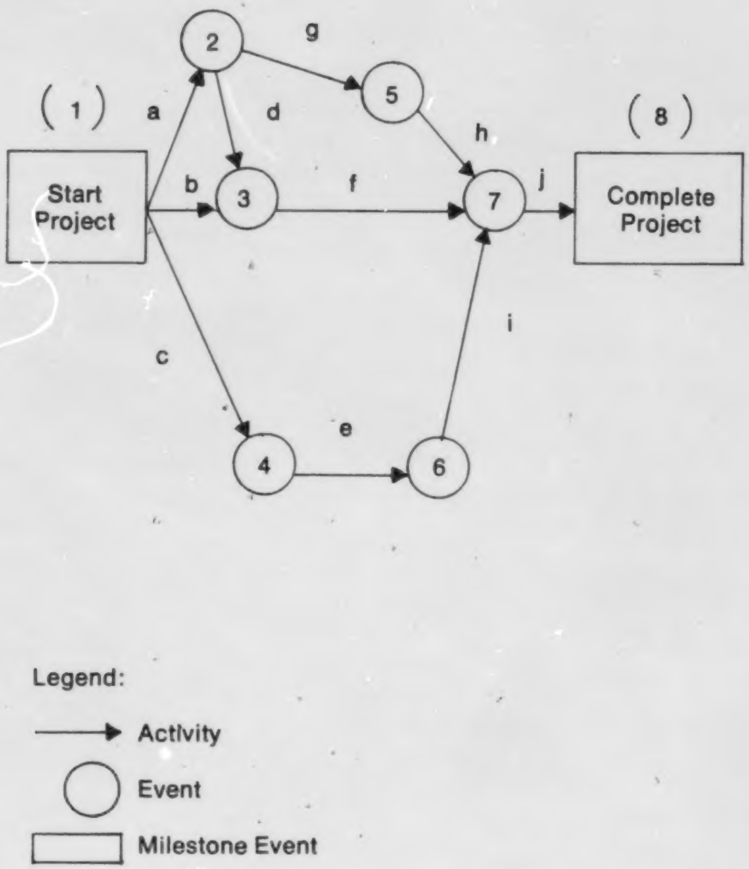
The second concept is *activity*, i.e., individual tasks or jobs. Associated with each activity are time and resources. Activities are represented by an arrow, as seen in Figure 7. Most networks are time-scaled, meaning that the horizontal range of an activity indicates the time span required. Thus, in the example, the time required for activity "e" is considerably longer than that for activity "a."

The third concept involves *events*, usually represented by a number within a figure such as a circle. Events represent points of accomplishment and consequently do not consume time or resources. Events represent the start or completion of activities. An event cannot occur until all activities preceding it are accomplished. A special type of event is the milestone event. These identify the beginning or completion of a major portion of the project.

The last concept is *constraint*, which refers to the condition of one activity not being able to start until a preceding activity is completed. In the example, activity "e" is dependent upon activity "c" and cannot begin until activity "c" is completed.

In most projects, there are alternative ways the project can be completed. Choice of the approach to be taken may need to be delayed until later in the process if no obvious "best" approach exists. Completion of a network for the project, based on the tasks identified in the project definition, is step two.

Figure 7
PROGRAM EVALUATION AND REVIEW TECHNIQUE (PERT) FLOW CHART OR NETWORK


(1)
Start Project
a
b
c
2
3
4
g
d
f
e
5
6
h
i
7
j
(8)
Complete Project
Legend:
Activity
Event
Milestone Event

3. *Adding time to the flow chart.* The third step in PERTing is adding consideration of time to the network. Initially, it will suffice to try to simply fit the network on a time line.

4. *Designation of resources for each event.* The fourth step in PERTing is the designation of resources for each event. One resource, time, has already been tentatively assigned. As other resources are assigned (people, dollars, etc.) adjustments may be needed. For example, in building a vocational high school it would be possible to increase the people assigned to developing the educational specifications and reduce the time involved. After due consideration of alternatives, this step should be concluded with a tentative network. The network and accompanying data would reveal: (a) events and activities included in the project; (b) relationship of these to one another; (c) time assigned to each activity; and (d) resources assigned to each activity. For many simple projects, PERTing will end at this point. For more sophisticated applications, step five is appropriate.

5. *Critical Path Method (CPM) and time estimates.* In step five, two major activities occur. First, a "critical path" is determined for the network. The critical path is basically the series of events that represent the most direct path through the network. In other words, those activities are identified upon which the timing of the project is keyed. Failure to meet the deadline for completion of an activity along this path will mean a delay in project completion. In addition to determining this path, it is possible to estimate the probability of completing the project based on time estimates for each activity. In somewhat more complex considerations, several computerized programs exist to help with this task. Generally, only complicated projects with over one hundred events can be profitably accommodated by electronic PERTing. Refer to Tanner (1973, Chap. 7) for an excellent discussion of electronic PERTing.

Strengths and Weaknesses of PERT

PERT has a number of identifiable strengths when utilized in planning. A primary value is the reduction in project time and costs. Studies completed in business have found actual savings of up to 20 percent in project time and up to 30 percent in the dollar costs of projects as a result of the application of network analysis. In addition to these savings, the technique makes apparent the critical steps in a project. It also makes explicit the various relationships within a total project, making coordination easier.

One of the greatest values of PERTing is increased control for the project manager. The technique allows detailed planning and scheduling. It aids in seeing the total project, all components of the project, and the nature of resources committed to the project. As a project gets under way, it is natural to depict progress graphically as it occurs. This control of a project may be the greatest single benefit.

The technique has few disadvantages. A significant weakness is possibly the fact that the total project is planned before it is implemented. Many decisions are made before one actually gets into the project. It is possible to misjudge the amount of time or resources that must be committed to an activity or activities. This problem is especially troublesome on large projects with a multitude of components and a long time frame. The difficulty is compounded when the PERT chart is regarded as inviolable. The concern can be largely overcome if the PERT chart is viewed as a planning guide and altered when it becomes apparent that modification is needed. In any sizable project, one should expect to have occasion to adjust the PERT chart as it is implemented.

Possible Applications

PERT can be used to plan and manage virtually any project. For projects that are regularly repeated, a generalized PERT chart could be developed. For example, the process of building a vocational school or of completing a report required at regular intervals by a state agency could be PERTed. Once a PERT chart is formulated for such a project, it can be used every time the task recurs with those adjustments to the chart that seem advisable based on its implementation. Other illustrations of repetitive uses would be: (a) evaluation of personnel; (b) process for program development; (c) procedure for new program approval; and (d) follow-up procedure for vocational program graduates.

The technique is also applicable for planning projects that are unique and will be implemented only once. The technique has been used repeatedly in the planning of federally related projects. For example, a federal project funding the development of a statewide plan for cancer education has been PERTed. The technique has been used in planning the development of other statewide master plans. A project such as the development of a competency based instruction program in consumer education could be PERTed with positive results. PERT could be used to schedule the dissemination of particular programs in vocational education. PERT would be helpful in managing a needs assessment in vocational education at the school district, state, or national level. PERT could even be utilized in the vocational classroom to describe a project such as routine tractor maintenance or construction of a house.

The potential applications are unlimited. In any project where the following are of concern, PERT is likely to be applicable:

1. Orderliness
2. Identification of all major steps to solution(s)
3. Highlighting of possible problems
4. Balancing of work load and resource assignment
5. Operational flexibility through consideration of alternatives
6. Error or problem identification prior to project "fatality"

Size of project, nature of activities, anticipated outcomes, or importance of the effort do not really alter the applicability of the technique.

The worth of this technique can probably be appreciated only as a result of actual use. A comprehensive treatment of the PERT technique has been outlined by Cook (1971). As outlined here, and discussed more fully by Cook, PERT can be a sophisticated approach to planning, including task analysis, scheduling, and resource allocation, for almost any project within vocational education.

Other Planning Techniques

The three planning techniques described thus far have many potential applications in comprehensive planning for vocational education. One should not assume that other techniques either do not exist or would not be useful. While space does not permit extensive treatment, techniques such as brainstorming; management by objectives (MBO); planning, programming, budgeting system (PPBS); and zero-based budgeting (ZBB) should receive careful consideration.

Brainstorming

Brainstorming, as a technique, was popularized primarily by Alex F. Osborn in the 1930s, 1940s, and early 1950s. It evolved from the simple concept that creativity and production of ideas are stifled by criticism. Brainstorming is a technique aimed at separation of creative and judgmental considerations. When a group or an individual postpones evaluation and assessment during the generation of ideas in problem solving, it is appropriately labeled brainstorming.

The process. Many people follow the basic rules of brainstorming without knowledge of the origin of the process. Osborn (1957) established four basic rules which have not been improved upon. Any attempt at brainstorming should follow these basic guides:

1. Criticism is ruled out. Adverse judgment of ideas must be withheld.
2. Freewheeling is encouraged. Wild ideas are fine. It is easier to tone down a notion than to enrich it.
3. Quantity is good. The larger the number of ideas, the greater the likelihood of a winner.
4. Permutations and combinations of already suggested ideas are helpful. One idea can lead to others.

Several additional considerations may help the process. Brainstorming is easier if the topic is clearly understood by all. It is best if the group has between five and ten participants. With less than five participants, the group tends to fall into discussion. And with more than 10 participants, it is likely that all individuals will not take an active role. Some participants may be inhibited by the inclusion of an authority figure in the group. If a person in the hierarchy tends to judge subordinates on the basis of their status, then that individual should be excluded. It is also useful if all of those taking part are not experts on the problem. A fresh view will often be useful. A brainstorming session is best limited to a short period, such as 30 minutes. Beyond that time period, the production of new ideas will tend to diminish rapidly.

Applications. Applications of brainstorming in planning are numerous. It is appropriate in any decision situation to help in listing the possibilities. It could be used in a simple situation such as identifying potential consultants or in a complex one such as identifying various ways of grouping learners. The process should remain the same.

Brainstorming is an easy to use, yet very fruitful planning technique. When production of ideas is the objective, brainstorming should be considered as an effective process.

Management by Objectives

Management by Objectives (MBO) would be considered by some people as an administrative technique rather than a planning technique. If planning is viewed as the attempt to move an organization, or part of an organization, from an existing state to a desired state, then MBO is a planning technique. As with other techniques, MBO was first introduced in the business and industrial environments and then into education.

The process. MBO is a planning approach that focusses on the mutual setting of goals and objectives by a superordinate and a subordinate. It typically concentrates on three separate but interrelated concerns. These are unit objectives, job descriptions, and personal objectives. The objectives are treated similarly, yet differently.

Unit goals and objectives should be set first. These need to be established for every unit within the organization such as a high school department, a vocational school, a school system, or a state department of vocational education. They should include short-range, intermediate, and long-range goals. These could be labeled as 1-year, 5-year, and 10-year targets. As these goals are developed, they must be interrelated among various units. The goals of a high school department must interface effectively with the goals of the entire high school. This does not mean that the goals and objectives of all units will be the same, but they obviously should not be working in opposite directions and, to the extent desirable, some integration would be helpful.

The basis for any unit meeting its goals and objectives is individual contributions. This is addressed in the other two concerns of MBO—job descriptions and personal objectives. Some contributions are routine and ongoing. These should be part of a job description. A major shortcoming in job descriptions is the focus on specific tasks to be done, rather than on the real objectives of the position. Contributions that are not routine, and especially those that are related to personal improvement, are the third category of objectives. These are personal objectives.

The objectives of a unit, in a job description, or of a personal nature have common characteristics. The setting of objectives ought to be a participatory process. Those people to be directly affected should contribute to the determination of the objectives. In setting the objectives for a school, the school staff should participate, possibly through a representative format rather than total staff involvement. Job descriptions and personal objectives should be established cooperatively between superordinates and subordinates.

Objectives should be reviewed, and adjusted as needed, on an annual basis. In fact, the annual review should tie together what has been accomplished with what are to be the targets for the future. Especially important in these reviews seem to be the interrelationships of various units and the interrelationships of an individual's personal objectives, job descriptions, and the unit's objectives.

Objectives as developed should not emphasize the "what" to be done as much as the "when" and "how." "What" alone is not very useful. A job description entry for a vocational counselor might read, "Assist the two hundred students assigned in job placement." Working within MBO, this should read, "Assist in the placement of students in jobs to the extent that at least 60 percent will be placed within six weeks of program completion." A personal objective might be, "To work to reduce employee grievances." A more desirable wording would be, "To develop specific techniques that will result in a reduction in formal grievances filed during the year by 50 percent."

Strengths and weaknesses. MBO has a number of strengths. It recognizes routine activities in job descriptions as well as the less routine in personal objectives. The process encourages and supports involvement of staff. This is a good administrative approach. Employee motivation may be increased because there is a clear understanding of what is to be done, and because a measure of progress has been clearly established. MBO obviously accomplishes the basic aspects of employee evaluation. Employee evaluation is taken out of a totally personal environment and placed in the context of organizational improvement.

As with other planning techniques, a potential problem with MBO is that a staff could go through the motions of planning without making any real attempts at improvement. Without a sincere desire for positive growth, MBO would be difficult, if not impossible, to utilize.

Management by Objectives is much like the next technique to be considered: the Planning, Programming, Budgeting System (PPBS). Both are planning and administrative techniques that are comprehensive in scope. Both have been widely tested in the educational setting and found to be useful.

Planning, Programming, Budgeting System

The Planning, Programming, Budgeting System (PPBS) gained wide recognition as a planning and budgeting technique through its extensive use in the federal government. Robert S. McNamara, secretary of defense under Presidents John F. Kennedy and Lyndon B. Johnson, introduced and implemented this system in the Department of Defense. While there was some vague criticism, typical of that associated with political figures, the project seemed quite successful. The achievement was sufficient to cause PPBS to be expanded to encompass all governmental activities at the federal level. The Rand Corporation, an independent nonprofit organization established to focus on governmental problems without partisan political pressure, has been instrumental in refining the PPBS process for use in federal agencies. President Johnson, as reported by Hovey (1968), identified seven objectives of PPBS as implemented in the federal government. They were to:

1. Ensure identification of specific goals
2. Establish the priority of goals
3. Promote efficiency
4. Foster economy
5. Spotlight program changes
6. Improve judgment and decision making as a result of better information
7. Aid performance evaluation

PPBS is basically a systematic way of displaying data and information that allows for more rational planning and decision making. The real contribution from using such an approach is the quality of outputs. In schools and other organizations emphasis has traditionally focussed on inputs.

The process. There are many components in the PPBS operation. As with any system, the components can be classified in a number of acceptable ways. Hartley (1968) has divided PPBS into six components. The first component is the rigorous analysis of the organization, culminating in the formulation of goals and objectives expressed in operational terms. The second component is development of a program structure. A program structure assigns the goals and objectives of the first component as outcomes of specific programs. Programs are groups of related activities designed to achieve particular goals. In the second component, human and material resources are also assigned. This process of assigning resources is referred to as programming. This component will be discussed in greater detail later, since it is the heart of the PPBS operation. The third component is multi-year planning. While budgeting may be accomplished on an incremental basis of one or two years, each increment should be a reflection of an integrated, long-range plan. Cost-effectiveness analysis is the fourth component. The costs and anticipated benefits of the various alternative programs must be compared and evaluated, resulting in the choice of alternatives to be pursued. The fifth component is budgeting, or the assignment of dollars to program elements. The last component is evaluation. Evaluation should be a continuous, year-round process designed to provide data helpful in accomplishing the other components.

Development of the program structure in the second component is vital to the success of the PPBS effort. The document produced in this component is usually referred to as a program memorandum. In general, such memoranda describe the underlying empirical relationships and assumptions on which the budget decisions are based. The program memorandum describes the relationship between "inputs" (e.g., organizational patterns, instructional techniques, and curriculum), and "outputs" (e.g., changes in student behavior, service levels, and consequences for the larger society). It is, of course, desirable that the categorization of programs be done in such a way as to remain somewhat stable over time to facilitate long-range planning. At the same time, programs must be flexible enough to allow the addition of new processes or entirely new programs. In summary, inputs are assigned to specific programs which are divided into processes; programs are then designed to achieve specific outputs.

The program structure can be established for educational organizations by two approaches. The larger environment and its needs can be assessed, and then goals and objectives should be formulated which will lead to the deduction of a program. This analytic approach is good in that it starts with needs. It is also time-consuming, requiring sophisticated analytic capacity, and is often accompanied by unrealistic goal setting. The second approach, the synthetic approach, involves examining activities and processes and grouping these into categories based on similarity of purpose. These categories are then grouped into larger categories until the programs of the organization become apparent. This approach tends to perpetuate the status quo. These two approaches can be used in combination as well. The production of a program memorandum moves an organization from a reactive to a proactive stance. The present is tied to the future.

Advantages and disadvantages. There are a number of advantages to be gained from PPBS compared to traditional budgeting systems. First, PPBS ties inputs, programs, and outputs together, while traditional budgets stress only the inputs. Second, PPBS allows for the rational consideration of alternative programs related to objectives. Third, PPBS allows for continuous, multi-year planning. Fourth, the organization, as a result of PPBS, can recognize the goals to which the major lines of action are directed. Another advantage is that PPBS relates service functions (research, teacher aids, transportation, etc.) to the specific programs they serve. PPBS should also aid in answering many general questions related to accountability, an obvious benefit. These questions could include what the organization is doing, why it is doing these particular things, and what it should be doing. Another benefit of PPBS is recognized in the negotiation processes occurring with increasing frequency. It is desirable in negotiation to be able to relate resources, including salaries, to the appropriate programs. This gives a much clearer picture, for example, of the actual costs of a salary increase.

While there are a number of definite advantages to PPBS, there are a number of misconceptions about this technique. PPBS does not refer, in any way, to computer programming. It is not a new label for an old notion such as performance budgeting or functional finance. PPBS is not a cost restraint device sacrificing goal accomplishment for minimum cost considerations. PPBS does not imply that all outputs can be quantified and measured. It is not a substitute for good management and is not inherently a dollar-stretching device.

There are some problems associated with PPBS, as there are with almost any planning technique. PPBS projects often violate established principles of effective human behavior in educational organizations. There are three common examples. First, persons at the operational level are not involved in goal setting; goal setting is all one-way, downward. Second, control becomes too hierarchical, resulting in one-way communication and information flow. Third, as a result of the first and second examples, motivation becomes poor. Teachers and students must be involved in PPBS. In other words, the tendency for PPBS to lead to an extreme centralizing bias must be avoided in an organization.

In addition, PPBS is a complex technique that is not easily understood. This becomes a concern when the public, and even the staff, feel they can't deal with the planning and budgeting process. A continuing problem is finding individuals really competent to work with the technique. Also, PPBS can be frustrating in that even though considerable effort has been expended in a systematic, rational process, decisions may still be based on political considerations.

PPBS can be an excellent planning technique. It is often viewed as a budgeting process and although budgeting is part of the package, planning should be the real focus.

Zero-Based Budgeting

Zero-Based Budgeting (ZBB) is like PPBS in many ways. Both are planning techniques that include budgeting. They are comprehensive and complex, with few people skilled in their use. Both were first developed in business and industry; they were then tried in government and finally utilized in educational organizations. Each one was popularized by exposure at the federal level.

ZBB is more recent than PPBS, and really has not made a great impact on education. A number of major corporations, such as Texas Instruments, have used the technique in the 1970s with success. President Jimmy Carter, as governor of Georgia, introduced the process for the first time on a massive scale in public service agencies. It is being used at his direction, as reported recently in *Education U.S.A.* (1977), at the federal government level.

The process. ZBB involves three basic steps. First, all organizational activities must be described in discrete "decision units" or "decision packages." Next, these units or packages must be evaluated and ranked by priority. Last, resources are allocated accordingly. As Stonich (1976) noted, this is not as simple as it may appear.

The first step is difficult and yet essential. A decision package is really a document that describes in detail a specific activity. Pyhrr (1970) identified the contents of a package as including the objectives of the activity, the program to meet these objectives, the consequences of not funding the

232

activity, staffing required, and funds needed. An example of an activity might be the hiring of new staff members to teach in the vocational schools within a school system.

There are two types of decision packages. Some activities can be described as discrete alternatives. In other words, either package A or package B, but not both, could be selected for funding. Using the example above, one decision package could describe hiring staff by building principals only. An alternative would be hiring by a central personnel specialist. A second kind of package is incremental in nature. Continuing the same example, one package could describe a basic approach in using the personnel specialist. A second package could describe another increment to be added to the first one, which would require screening by building principals, in addition to using the specialist. All activities in the organization are to be considered as new activities. They need to be analyzed and assigned to these kinds of packages.

Once so assigned, a priority can be attached to each package in light of the extent to which it furthers the goals of the organization. Based on the priorities, resources can be allocated.

Advantages and disadvantages. The primary advantage in this approach is that each year all organizational activities are again reviewed. In traditional planning and budgeting, only new items and some specific categories such as consultant services and travel are scrutinized. The rest of the budget is routinely continued unless scarce resources dictate a reduction in funding. In that case, cuts are often made on a percentage basis "across the board." It is this feature, that of starting at "ground zero" and funding only those packages desired, that is the basic value and identifying characteristic of ZBB.

ZBB is not without problems. It creates new paperwork and consumes more time than traditional budgeting. Since the results are also better, maybe the added investment is worthwhile. As a planning process, it is threatening to many people. The need to continually justify anew all programs and activities is alarming. Some look on it as a new device to cut a budget.

It should be emphasized that in spite of the budgeting label, ZBB is a planning technique. The planning is tied to budgeting, but the budgeting is really the documentation of basic planning decisions. ZBB is clearly future oriented. With ZBB, administrators should have available much better information on which to plan. ZBB tends to stress short-range incremental planning. It would be adaptable to longer time frames with very few problems.

Summary

This chapter has attempted to describe several planning techniques, some in detail and others not so detailed. Many useful and interesting techniques, such as gaming, simulation, cross-matrix analysis, contextual mapping, the Aeriole Technique, the Markov chain, and relevance trees could not appropriately be treated in a publication of this nature. All of the techniques described in this chapter have had some visibility, and a proven record of successful use, in the public service environments as well as in private industry.

As one contemplates comprehensive planning in vocational education, it will be important to consider the array of techniques available. While similar in the sense of their foundation in systems analysis, each technique has its own special strengths and weaknesses. The planning process, resources available, and needs of the organization must be the basis on which a technique is selected or rejected.

References Cited

American Association of School Administrators, National Academy for School Executives. *Management by objectives and results.* Arlington, Va.: AASA, 1973.

Anderson, D. P. *Clarifying and setting objectives on an intermediate school district's objectives utilizing the delphi technique.* Paper presented at the meeting of the American Educational Research Association, Minneapolis, March 1970.

Baratte, M. K. *Utilization of delphi to rate program evaluation criteria in vocational education.* Unpublished doctoral dissertation, Ohio State University, 1974.

Brooks, K. B., Colton, D., Conrad, M. J., and Kelley, R. *The right to excel: A replanning study of the Illinois plan for program development for gifted children.* Columbus, Ohio: The Ohio State University, 1972.

Brooks, K. B., and Conrad, M. J. The advocate team process. *Educational Technology 13*(101), 1973.

Brooks, W. *A fixed study to determine characteristics of most successful vocational education programs.* Bethesda, Md.: 1972. (ERIC Document Reproduction Service No. ED 069 276)

Burrow, J., and Groneman, N. *The purposes of and competencies developed through occupational experience for vocational education teachers.* Lincoln: University of Nebraska, December 1976.

Cochran, S. W., Crumley, M. M., and Overby, B. N. *A study of category scaling methods.* Commerce, Tex.: East Texas State University, 1970.

Cook, D. L. *Educational project management.* Columbus, Ohio: Charles E. Merrill, 1971.

Corbin, S. B. *Formulation of goals and objectives for the high school division of the Distributive Education Clubs of America.* Unpublished doctoral dissertation, Virginia Polytechnic Institute and State University, 1975.

Corbin, S. B., and Eggland, S. A. *Identification of the rate of the collegiate division of the Distributive Education Clubs of America.* Unpublished manuscript, Collegiate Division, Distributive Education Clubs of America, 1976.

Cyphert, F. R., and Grant, W. L. The delphi technique: A case study. *Phi Delta Kappan,* January 1971.

Dalkey, N. C. *Studies in the quality of life.* Lexington, Ky.: Lexington Books, 1972.

Espinoza, B. A. *Organizational needs for organization development for the Kentucky system of vocational education*. Unpublished doctoral dissertation, University of Kentucky, 1971.

Gray, K. E. A planning tool for local teachers. *Agricultural education magazine 45*(1), 1972.

Gray, K. E. *Competencies needed by personnel engaged in program planning in state divisions of vocational-technical education*. Unpublished doctoral dissertation, The Ohio State University, 1970.

Hartley, H. J. *Educational planning—programming—budgeting*. Englewood Cliffs, N. J.: Prentice-Hall, 1968.

Helmer, O. *Social technology*. New York: Basic Books, 1966.

Hostrop, R. W. *Managing education for results*. Homewood, Ill.: ETC Publications, 1973.

Hovey, H. A. *The planning—programming—budgeting approach to government decision-making*. New York: Frederick A. Praeger, 1968.

Marshall, W. M. The future of home economics: A delphi study. *Journal of Home Economics*, 1973, *65*(7).

National School Public Relations Association. Will zero-based budgeting improve accountability? *Education U.S.A.*, 1977, *19*(33).

Osborn, A. F. *Applied imagination*. New York: Charles Scribner and Sons, 1957.

Phyrr, P. A. Zero-based budgeting. *Harvard Business Review*, 1970, *48*(6).

Phyrr, P. A. *Zero-based budgeting, a practical management tool for evaluating expenses*. New York: John Wiley and Sons, 1973.

Reinhard, D. L. *Methodology development for input evaluation using advocate and design teams*. Unpublished doctoral dissertation, The Ohio State University, 1972.

Stonich, P. J. Zero-based planning—a management tool. *Managerial Planning*, 1976, *25*(4).

Starkweather, K. N. *A study of potential directions for industrial arts toward the year 2000 A.D.* Unpublished doctoral dissertation, University of Maryland, 1975.

Tanner, C. K. *Designs for educational programs*. New York: D. C. Heath and Company, 1973.

Toffler, A. *Future shock*. New York: Random House, 1970.

CHAPTER 10

EVALUATING THE EFFECTIVENESS OF COMPREHENSIVE PLANNING

John K. Coster and Patricia D. Poplin

As vocational education has assumed new prominence and visibility through passage of the Education Amendments of 1976, increased emphasis is being placed on accountability through the development of effective evaluation systems. The federal administrative agencies, each state, and local educational agencies have been mandated through federal legislation to implement a comprehensive and continuous evaluation system. These systems are essential for comprehensive planning in vocational education and for meeting federal and state accountability requirements.

There needs to be developed a model evaluation system—one that will interphase the evaluation, review, revision, and accountability reporting efforts at the national, state, and local levels so as to improve the efficiency and effectiveness of the delivery system for vocational education programs and services. The model should be sufficiently flexible to meet the individual needs of each operating unit that will be involved in the overall system. Yet comparative data must be generated from the evaluative process to meet the needs of program planners and decision makers at the policy-making and administrative levels.

The planning and evaluation of vocational education cannot be accomplished effectively without careful consideration of several very complex factors that relate to the educational system as well as other systems that supply and demand skilled manpower. Vocational education is expected to contribute to the supply of trained manpower; it is expected to help satisfy various student needs such as a relevant and challenging curriculum; and, it is expected to contribute to the social and economic needs of the entire nation.

Planning for and evaluating the effectiveness of all aspects of vocational education is a most difficult endeavor. Those responsible for vocational education programs must face this realization. In discussing ***A Model Sys-***

tem for Planning and Evaluating Vocational Education Programs, Pershing (1977) said:

> Planning and evaluation are inseparable entities—an idea that is too often ignored or not recognized among educators. . . . (Each of these entities must be clearly understood in terms of their relationship to each other.) Planning involves thought that precedes action. It is deciding in advance what to do, how to do it, when to do it, and who is to do it. It bridges the gap from where we are to where we want to go. Planning makes it possible for things to occur which would not otherwise happen. Without planning, events are left to chance. . . . Planning is an intellectual process, the conscious determination of courses of action, the basing of decisions on purpose, facts, and considered estimates (pp. 3-4).

One may be said to be involved in evaluation whenever one seeks answers to questions such as the merits or value of a particular program, or the effects of a given action, or the workability of a specific plan. Evaluation is the process which enables a decision maker to ascertain the effects of a program or a plan of action, and thereby to make progressive adjustments in order to reach a goal more effectively. In its broadest sense, evaluation assumes that a goal has been established and that the desirable and undesirable consequences of actions taken to achieve the goal are analyzed continuously. Evaluation is the process that determines the extent to which goals have been achieved. This process is an appraisal of value regarding plans that have been formulated, the planning process, and the output and outcomes of a program based on the plans that have been followed.

As a plan is formulated, choices must be made among alternatives. As a plan is implemented, monitoring is necessary to identify strengths and weaknesses in the plan. These activities constitute the evaluation process. Thus, evaluation occurs as a plan is formulated, implemented, reviewed, and revised. Planning and evaluation are indispensable to a sound program of vocational education.

Perspectives on Evaluation and Accountability

The American Vocational Association has undertaken through resolutions and programs of work to ensure that vocational education will be provided to all persons who want it and need it. This has been executed principally in the secondary and postsecondary schools of the nation. The association also has endeavored through legislative committees and actions to ensure continued federal and state support for vocational education.

Vocational education and vocational educators have paid a price for this support. With less than $1 billion in federal support, vocational education has been expected to prepare for employment all persons who are enrolled in secondary and postsecondary schools and at the same time to provide leadership in a war against inequality of educational opportunities and inaccessibility to educational programs. Similarly, vocational education has been held accountable for placing its program completers in occupations that are congruent with the programs in which they were enrolled.

The purpose of this chapter is to establish a rationale for a broadened perspective on evaluation and accountability. For far too long, vocational education has been held accountable for performance that requires the support of other elements in the educational system that are outside the control of vocational educators. This chapter seeks to transfer the basic unit of accountability from the vocational education subsystem to the whole educational system and to set the system and subsystem performance within the context of an expanded set of goals.

The Triad of Goals

The performance of vocational education within the public school system is set within the context of *three* major social goals relating to the work and workers of contemporary American society: employment, employability, and equality. These goals have been formulated in response to social needs principally, but not wholly, by committees and subcommittees of the U.S. Congress.

Employment

The goal of full employment, or, stated in more realistic terms, of minimizing unemployment, is a prime national goal (Gordon, 1967). The unemployment rate is a principal indicator of the health of the economy, and few social indicators generate more rapid action by the administrative and legislative branches of government than an upward surge in the rate of unemployment. Full employment as a national policy is declared in the Employment Act of 1946 (section 2) as follows:

> The Congress hereby declares that it is the continuing policy and responsibility of the Federal Government to use all practicable means consistent with its needs and obligations and other essential considerations of national policy, with the assistance and cooperation of industry, agriculture, labor, and state and local governments, to coordinate and utilize all its plans, functions, and resources for the purpose of creating and maintaining, in a manner calculated to foster and promote competitive enterprise and the general welfare, conditions under which there will be afforded useful employment opportunities, including self-employment, for those able, willing and seeking to work, and to promote maximum employment, production, and purchasing power.

The goal of full employment is manifested in numerous federal acts and programs, among which may be listed four major acts of the 1960s (Area Redevelopment Act of 1961, Manpower Development and Training Act of 1962, Vocational Education Act of 1963, and Equal Opportunity Act of 1964); the acts establishing regional commissions, including the Appa-

238

lachian Regional Commission, the Coastal Plains Regional Commission, the Ozarkian Regional Commission, and the Four Corners Regional Commission; and more recently, the Comprehensive Employment and Training Act of 1973 and the Education Amendments of 1976.

The Humphrey-Hawkins Bill (H.R. 50, S. 50) currently under consideration by the U.S. Congress extends the Employment Act of 1946 and sets minimum acceptable goals of unemployment. According to the provisions of the bill, an unemployment goal of 4 percent is to be attained within five years after the act is passed. Four major strategies have been identified to achieve the goal of full employment: (1) increasing the flow of money, principally by reducing the prime rate of interest; (2) reducing federal income taxes; (3) creating a supply of jobs, principally in public service occupations; and (4) increasing the opportunity to train for employment, including instances in which the trainee is paid a stipend while undergoing training for employment.

Employability

Employability refers to the state of readiness for employment. It means that the person possesses saleable skills for employment, and that any conditions of disadvantagement or handicap that might work against employment have been alleviated or at least minimized.

The goal of employability states that all persons who are not in school and who do not have unremediated handicaps that preclude them from working have been prepared for employment. The effect of the goal is to minimize the number and percentage of the population of working age who are not in school and who are not able to participate in society as productive workers, whether in paid or unpaid employment.

Employability has four major dimensions: (a) the development of competencies in the basic learning skills; (b) the development of competencies relating to acquiring and processing information and making decisions about careers; (c) the development of competencies pertaining to roles, knowledges, and skills required for entry into a job; and (d) the development of attitudes, values, and habits which are essential to effective participation in the work of the nation. The concept of employability extends to the total population of persons who are, who desire to be, or who are capable of being included in the labor force, including the handicapped and the disadvantaged.

Maximizing employability as a national policy is manifested in such acts as the Morrill Act of 1862, the Vocational Education Act of 1917 as amended, the National Defense Education Act of 1958, and the Vocational Education Act of 1963 as amended. It is also manifested in statements of expanded aims and policies of American education, including the "Seven Cardinal Principles of Education" (CRSE, 1918); "The Seven Cardinal Principles Revisited" (NEA, 1976); the pronouncements of the Education Policies Commission (1938, 1944, 1956); and the "Ten Imperative Needs of Youth," the first of which states, "All youth need to develop saleable skills and those understandings and attitudes that make the worker an intelligent and productive participant in economic life" (NASSP, 1947, p. 7).

Equality

The concept of equality has permeated all federal legislation pertaining to preparing persons for employment, starting with the Morrill Act of 1862 and continuing with the Vocational Education Act of 1917 as amended and the Vocational Education Act of 1963 as amended. The preamble to the Vocational Education Amendments of 1968 (Part D, section 141) states:

> The Congress finds that it is necessary to reduce the continuing seriously high level of youth unemployment by developing means for giving the same kind of attention as is now given to the college preparation needs of those young persons who go on to college, to the job preparation needs of the two out of three young persons who end their education at or before the completion of the secondary level, too many of whom face long and bitter months of job hunting or marginal work after leaving school.

Subsequent acts have continued and broadened the quest for equality. Notable recent additions include Title IX of the Education Amendments of 1972 and special provisions of the Education Amendments of 1976 which are intended to alleviate inequality of employment and educational opportunities based on sex, race, ethnic origin, age, and physical and mental disabilities.

The "triad of goals" transcends the scope of the public school system and traverses the multitude of social systems that are responsible for employment and employability. Any attempt to address evaluation and accountability of vocational education systems necessitates that the limits of accountability be bounded. Hence, it is assumed that the public school system has primary responsibility for the goal of employability and secondary responsibility for the goals of employment and equality. The goal of employability requires first that any student who leaves the public school system at any point is prepared either to enter a job or is prepared for the next level of education, or both. And the goal requires secondly that the job for which preparation was received is one for which a demand exists.

Evaluation of System Performance

The goals as stated above require comprehensive planning for implementation and comprehensive evaluation for accountability within the context of system performance. *System* is used here to refer to a collection of elements organized to achieve a goal or set of goals (Churchman, 1968; Van Gigch, 1974). A social system is bounded by the elements that are under the jurisdiction of the management (i.e., decision maker) of the system. Elements not within the jurisdiction of the system manager are part of the environment and considered as "givens" (Van Gigch, 1974, p. 13).

Evaluation is used here to refer to the process of gathering and processing information for decision making (Cooley & Lohnes, 1976; Stufflebeam, Foley, Guba, Hammond, Merriman, & Provers, (1971). Evaluation is considered to be a process, not a product. The product of the evaluation process is the decision that is made by the decision maker based on the evaluation. Casting evaluation as a process is not intended to imply that all evaluation is formative evaluation (Scriven, 1967). The process of evaluation attends to both formative and summative evaluation and to goal-free and goal-directed evaluation (Scriven, 1974).

Accountability is a subset of evaluation and refers to the act of ascertaining who (or what system) is responsible for what is done (or not done) for a client or client group. *System accountability,* according to Lessinger and Tuttle (1974), "reflects the degree to which an educational system succeeds in delivering on its promises in return for the resources provided" (p. 12).

The primary characteristic of the American public education system has been its expansion. Expansion is expressed both in terms of the goals to be attained and the clientele to be served. Expansion has come both from external and internal forces. The primary impetus for transforming the public school system into a system contributing to the achievement of the goals of employment, employability, and equality has been the U.S. Congress (Barlow, 1967). The Morrill Act of 1862 essentially provided for the establishment of a new system of higher education, and the Vocational Education Act of 1917 provided the impetus for the expansion of the public secondary school system to include vocational education.

The federal government has not been directly involved in education, but, as the Education Policies Commission (1939) pointed out, the federal government has not been without influence in educational affairs:

> Unlike the arrangement usually found in other countries, public education in the United States is primarily a function of the states and their political subdivisons. Instead of one school system, the nation has as many systems of public education as there are states and organized territories. The absence of a national school system does not mean, however, that the federal government has been without influence in educational affairs. On the contrary, its policies and practices have affected education in the states, and it has carried on extensive educational undertakings of its own. Present policies are a part of a line of developments that date back more than one hundred fifty years (p. 1).

The chief impact of the actions of the federal government during the present century is *to change the public school system from a system of exclusion to a system of inclusion.* Educational opportunities, including the opportunities to prepare for gainful employment, are not to be denied. The change of the system from one of exclusion to one of inclusion has placed responsibility for the goal of employability on the whole public school system rather than on the vocational education subsystem. The vocational education subsystem is responsible for and should be evaluated for instructional program performance (Butler, 1972; Wentling & Lawson, 1975); the whole public school system is responsible for performance of all of the elements in the system.

The vocational education subsystem is expected to prepare persons for employment at the secondary and postsecondary levels. Vocational education is expected to function in part to achieve the social goal of employability. The accountability for achieving the goal is placed on the management of the total system. That is, the superintendent and the board of education exercise managerial responsibility for all activities within the system that contribute to the goal of employability.

Social systems are forged in the crucible of social needs, and the goals of the social systems are ultimately expressions of the ideals and desires of the people. Ultimately, too, it is the people who hold the managers of social systems accountable for the performance of the system, and it is the people who make judgments of worth. The people, in the contemporary structure of the social system, are represented by the vocational education advisory councils.

If the goal of employability is accepted as the principal goal relating to work and workers for the public school system, with employment and equality as secondary goals, then it follows that evaluation focusses primarily on the output of the system. The major question is: Are the persons who leave the system employable, and can they expect to obtain employment with reasonable ease? Stated in another way, do the persons who leave the system have saleable skills, and is there a market for these skills?

This question of output engenders numerous issues and questions which require resolution by both the system manager and the evaluation. The first issue pertains to what constitutes employability. The language of the federal vocational education acts is relatively clear: Employability is the capability to be employed in the labor market. But there are other positions. The National Education Association Bicentennial Committee in the "Seven Cardinal Principles Revisited" took a less absolute position in asserting that "the best vocational education is a general education" (1976, p. 65). Or take the question of relative versus absolute evaluation. Norm reference tests such as those constructed by Baldwin (1971) yield information about an individual's standing, whereas criterion referenced tests such as those constructed by Shinn (1973) and those to be used in conjunction with the Vocational Technical Education Consortium of the States (Hirst, 1977; Lee, Hinson, & Rohrbach, 1977) yield information on whether an individual has reached a level of proficiency based on an absolute test. Being qualified for licensing is prima facie evidence of employability, even though Shimberg, Esser, and Knight (1972), who studied occupational licensing, are somewhat critical of some licensing tests that currently are being used. Employment may be taken also as prima facie evidence of employability; in fact, a strong argument may be made that employment is sufficient evidence of system effectiveness. Because employment is subject to fluctuations in labor market demand, however, it cannot always be cited as a valid indication of system effectiveness.

The absolute or idealized standard may be applied at four points in the scheme of evaluation:

1. Who is enrolled in vocational education programs?
2. Who completes vocational programs?
3. Are program completers prepared for employment?
4. Are program completers employed?

The first question deals with the number and percentage of persons in the public school system who are being prepared for employment and may be expressed as a percentage of all persons who might have been enrolled in the system. This question has been addressed by the National Advisory Council on Vocational Education (1968), Starr and Diffenderfer (1972), Lee and Fitzgerald (1976) in "Project Baseline," and in management information systems developed in the several states, a number of which have been reported by Morgan, Ballenger, and Lawrence (1974).

The second question deals with the program completers, and may be expressed as the percentage of all persons who graduate or leave school who have completed programs designed to prepare for employment. This question has been addressed by Starr and Diffenderfer (1972), Lee and Fitzgerald (1976), Morgan, Ballenger, and Lawrence (1974), and by Williams (1971).

The third question dealing with indicators of employability has been dealt with by Baldwin (1971), Shinn (1973), and the Vocational Technical Education Consortium of the States (Hirst, 1977), as well as by a number of licensing agencies reported by Shimberg, Esser, and Knight (1972).

The fourth question, pertaining to employment of program completers, has been addressed by Eninger (1965, 1968); Kaufman, Schaefer, Lewis, Stevens, and House (1967); and Katz, Morgan, and Drewes (1974). It was also covered in highly specialized studies by Persons and Swanson (1966, 1968), and by Carroll and Ihnen (1967). The latter two studies focussed on cost-effectiveness of programs. Additional cost-effectiveness studies were reported by Coster and Ihnen (1968).

The four questions are each addressed to a part of the evaluation of a system. The appraisal of a whole system has been conceptualized by Harris (1947), who stated that the appraisal of a school should be addressed to (a) the plans and purposes, (b) the resources—including fiscal, physical, and personal resources, (c) the processes, and (d) the results or outcomes.

The four elements presented by Harris have been expanded for educational system evaluation by Coster and Morgan (1970). The evaluation model is shown in Figure 9. The structural elements of the model are:

1. The value structure of a given society, including the social, political, and economic structure in which the whole system functions. (The "triad

of goals" cited in this chapter comes from the value structure of American society.)

2. The clientele and the attributes of the clientele for which programs are designed.

3. The mission of the system, which is a statement of the main purpose of the system.

4. The goals of the system relating to work and workers.

5. The product objectives, or desired outputs.

6. The system plans.

7. The observed processes.

a. The operational processes, including the methods, techniques, emphases and efforts exercised to attain the product objective.

b. The resources—both material (including facilities and equipment) and human (including teachers, administrators, supervisors, service and special staffs)—utilized to attain the product objectives.

8. The observed output—defined in terms of statement of system performance.

9. The observed outcomes—defined in terms of the goal of the system in interaction with the environment.

10. The environment—defined as forces external to the system, over which the system manager has limited control, which impinge on system output to alter outcomes.

The model is applied to the performance of the whole system with regard to the triad of goals and with special reference to the goals of employability and employment. The model focusses primarily on the output and outcomes of the system. The whole system is accountable for the output, defined as the preemployment state of employability, and may be determined by measures applied to ascertain individual performance. The question is: Does the individual possess the competencies required for initial entry in an appropriate job? The vocational education subsystem is responsible for the specific skills required for employment. Program performance, which relates to the vocational education subsystem, is presented later in the chapter.

Outcome is defined as the interaction of the output with the environment. The question here is: Is the individual employed? The desired condition requires reasonable congruence between output and outcomes; that is, the product of the system is not only employed, but employed in a job related to the program in which training was received. Evaluators seek congruence between output and outcomes. Where noncongruence exists, i.e., when persons judged to be employable are not employed or when an excessive proportion of persons prepared for entry into an occupational field are not employed in that field, then remedial action is required by the manager of the system. The plans, the objectives, or the processes may be evaluated.

Rules of Evidence for System Performance

The process of evaluation, including accountability, is not an exact science. Even in a carefully controlled laboratory, when a researcher is interested in evaluating the effects of two or more treatments, decisions are made on data which lack exactness. For example, the experimenter may determine what confidence limits to use in testing a hypothesis. Or the experimenter may decide to transform the data or not to transform the data. And even if a hypothesis is rejected, the experimenter or the decision maker has latitude in interpreting results. The processes of evaluation involve the collecting of the best evidence available and making judgment on the evidence.

The evaluation process is not unlike the process followed in the courts of law. A jury is usually instructed to apply the facts to the law in the case before the courts and then evaluate the impact of the facts. The collection of data, and the evaluation and application of the facts to the case are part of the judicial process. The process includes the evaluation of evidence—deciding what evidence to include and what to exclude. The product of the process is the decision to declare the defendant "guilty" or "not guilty."

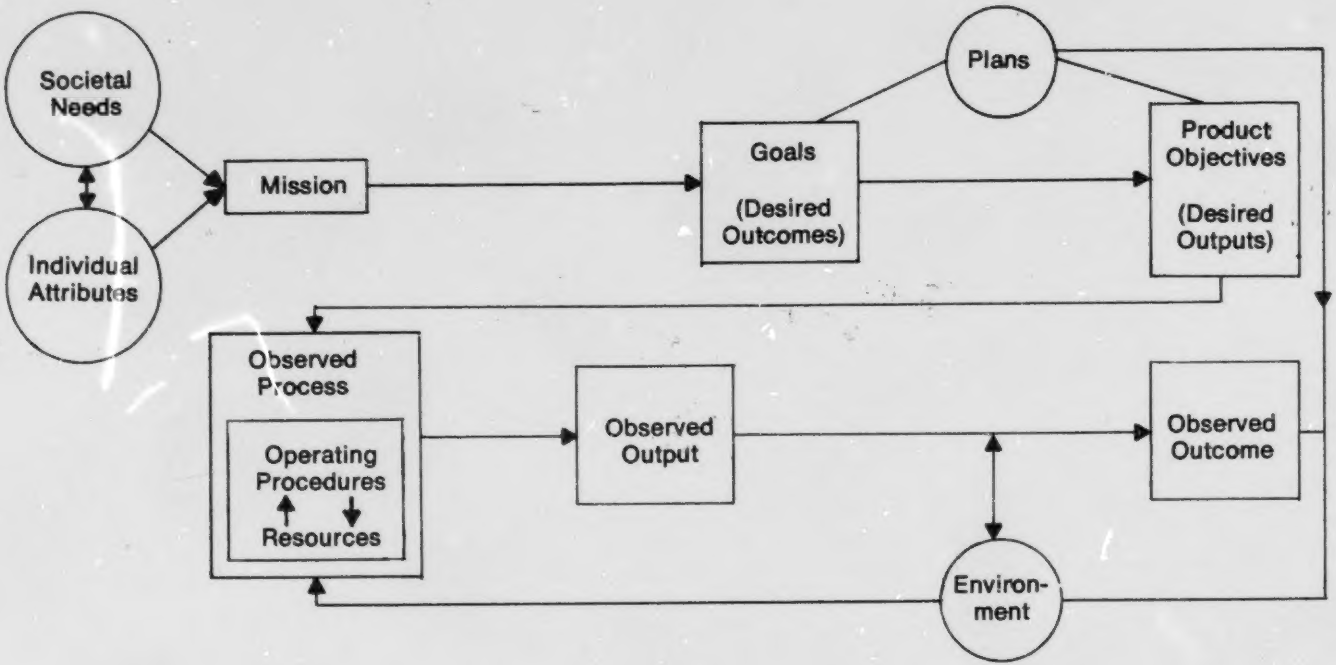
A similar procedure is followed in the accrediting process, which is a special type of evaluation of the whole system, based on standards established by representatives of the accrediting institution. A self-study is based on guidelines prepared by members of the accrediting agency. A fact-finding team collects and processes information, which is applied against the standards. The product of the process is the decision of the appropriate body to grant or not to grant accreditation (Childers, 1972).

The ultimate evaluation of system performance is based on decisions concerning (a) the expected performance of the system, and (b) the evidence that the decision makers are willing to accept that the performance meets the criteria set for acceptable performance. The range of evidence relates to the elements of the system, such as those cited by Harris (1947): plans and purposes, processes, resources, and results or outcomes; the content, which is the basis for the model in Figure 8; and the process, which consists of the persons or groups deciding on evidence. Vocational educators, for example, are interested in the evidence that the members of the U.S. Congress are willing to accept that the goals set for work and workers are being achieved and that investments of federal funds are impacting as desired. National and state vocational education advisory councils are interested in evidence that the needs of the people in each state are ascertained and met. The public at large may be interested in evidence that the goals and objectives are appropriate and that the outcomes are congruent with the goals.

The major questions presented here were developed originally for a project conducted by Byram (1971). Some of the specific questions have been extracted from a publication entitled *Questions in Vocational Education* (Drewes, Nerden, Lawrence, & Oglesby, 1975).

Figure 8

STRUCTURAL MODEL FOR VOCATIONAL EDUCATION EVALUATION


Societal Needs
Individual Attributes
Mission
Plans
Goals
(Desired Outcomes)
Product Objectives
(Desired Outputs)
Observed Process
Operating Procedures
Resources
Observed Output
Observed Outcome
Environ-ment

Goals and Objectives

First, what evidence are you willing to accept that the goals and objectives defined for the whole system relating to work and workers are the appropriate goals and objectives?

Goals and objectives of a social system are determined principally on the basis of a need that exists in society. Needs assessment is sometimes equated with goal setting (Uhl, 1971; Hoepfner, Bradley, Klein, & Alkin, 1972; Kaufman, 1972). As systems are modified or changed, so also do goals and objectives change. In the overall system referred to previously, the change from a system of exclusion to a system of inclusion can be expected to be reflected in changes in objectives. The recent emphasis in federal legislation on equality—especially with regard to preparing women, minority groups, the disadvantaged, and the handicapped for employment—can be expected to be reflected in goals and objectives.

Questions that may be asked about the adequacy of goals and objectives are:

1. How were the goals and objectives determined? What needs assessment data were used in determining the goals and objectives? How were the data collected? How adequate are the data?
2. To what extent do the goals and objectives address the totality of the population to be prepared for employment in the public school system, and to what extent do the goals and objectives address the quality and scope of training to be provided?
3. To what extent do the goals and objectives address career decision making and development?
4. To what extent do the goals and objectives address the expected output and outcomes of the system?

Plans

Second, what evidence are you willing to accept that the plans for vocational education in the system are adequate and based on appropriate data?

1. How is the need for vocational education programs established?

    a. What demographic information is gathered, how is it obtained, and how is it used? Demographic information includes the total population in the region of interest; annual changes in population; rural and urban distribution; specific population by race, age, and sex; annual net migration; and percentage of families with incomes below the poverty level.

    b. What employment information is used? Employment information includes description of the labor markets for the region of interest; labor force by race, sex, and age; community employment by occupation; community employment by industrial groups; job opportunities by occupation; and short- and long-term anticipated labor market demands by occupations.

    c. What educational information is used? Educational information includes median years of schooling completed by age, race, and sex; occupation of all employed persons who are 16 years of age and older by field of vocational training, age, and sex; percentage of the population not in school who have been trained for employment; and percentage of the population who are functionally illiterate.

d. What economic information is used? Economic information includes per capita income; total dollar value of wholesale and retail sales; capital investments by industrial groups; and wages and salaries earned.

2. Who is involved in planning and what is the extent of involvement? What groups and persons participate in planning?

3. How are plans evaluated? What feedback mechanisms are used? What alternative plans are made and how are alleviation plans evaluated? How frequently are plans modified?

4. How are policies relating to planning formulated? How are they evaluated? How frequently are they reviewed?

Resources for Vocational Education

Third, what evidence are you willing to accept that the resources for vocational education are adequate?

1. What fiscal resources from federal, state, and local funds are allocated to vocational education? What is the total expenditure for the state or for local public school systems? What is the per pupil expenditure? What evidence exists that expenditures are adequate or not adequate?

2. What physical resources are provided for the vocational education system? How adequate are the resources? Are the physical resources adequate to achieve the goals?

3. What personnel resources are provided for vocational education? Are the personnel adequately prepared? Do they possess the necessary credentials? Are the personnel resources adequate to achieve the goals and objectives of vocational education?

Operating Procedures and Processes

Fourth, what evidence are you willing to accept that the operating procedures and processes of vocational education are appropriate to achieve its goals and objectives?

1. How adequate is the curriculum? What procedures are used to determine the needs and curriculum to be offered in the school? How is the curriculum evaluated? What feedback is used in modification of the curriculum?

2. What special provisions are made for persons with special needs? How are these persons being served?

3. Are employers involved in the development and testing of the curriculum? Are advisory councils and craft committees consulted?

4. What evidence is obtained to ensure that students who leave the school to seek employment possess adequate competencies in the basic learning skills? What instruments are used? Do the instruments yield data that are predictive of success? To what extent have employers been consulted in establishing minimum standards of performance in basic learning skills for employment?

Output of the Vocational Education System

Fifth, what evidence are you willing to accept that the output of the vocational education system is congruent with the goals and objectives of the system?

1. How is employability ascertained? What instruments are used? To what extent are representatives of employer groups and advisory committee members used to determine employability? What corrective measures are being taken?
2. What percentage of the persons who leave school is the system willing to certify as employable? What standards for employability in terms of percentage of the school population have been set? What remedial action is being taken? What steps are taken to ensure that persons with special needs are employable when they leave school?
3. Are the persons who leave school prepared for jobs that are available? How does the output compare with employment opportunities? Should plans be changed? What remedial action is being taken?
4. What attention is being given to students who leave school without being prepared for employment? Are the policies and goals of the system addressed to these persons? Are special programs provided?
5. How is output compared with curriculum? What discrepancies exist? What remedial action is being taken?

Outcomes of the System

Sixth, what evidence are you willing to accept that the outcomes of the system are congruent with the goals and objectives and with societal and individual needs?

1. What evidence is available to denote whether program completers have been employed? What evidence exists that noncompleters have been employed? What percentage of youth who seek employment are employed? How long after a youth leaves school is he or she employed? Are employers satisfied with the product of the system?
2. How do outcomes relate to plans? Are students employed in the fields in which they were prepared? To what extent is preparation being offered in fields for which there is no demand for the product?
3. Are program completers satisfied with the productivity of the system? Where does the system fall short? What remedial action is indicated?

Program Performance

If the public school system is to be held principally accountable for achieving the goal of employability and for contributing to the goals of employment and equality, for what is the vocational subsystem accountable? The subsystem is responsible for instructional program performance, i.e., for the set of activities and results that are associated with vocational programs. The instructional program includes curriculum performance, development, and evaluation. It also includes the technical performance of the student, i.e., the competency of the student to perform the skills required for employment, and all aspects of the process associated with skill development, including resources and evaluation of skill competency.

The vocational education subsystem is responsible for the overall planning of the system. Here the subsystem influences the whole system performance. The translation of information from the demands of the labor market to the planning section of the school system requires expertise which is not likely to be found outside the vocational education subsystem.

The vocational education subsystem is also responsible for systems improvement, and in some instances, redesign. The subsystem is responsible for contributing to the improvement of the whole system in order to achieve the goals.

Placement and follow-up, part of outcome evaluation, are also major responsibilities of vocational education. The feedback information from outcome evaluation is to be translated into improved plans and curriculum performance.

Summary

The main purpose of this chapter is to broaden the perspective of evaluation and accountability in vocational education. Three broad national goals of contemporary American society pertaining to work and workers, which transcend vocational education and even the public school system, are identified; a rationale for changing the unit of responsibility from the vocational education subsystem to the public school system are presented; a model for evaluation of the whole system is provided, and rules of evidence for evaluating a system performance are given. The intent is to demonstrate that the change in the public school system from a system of exclusion to a system of inclusion required that attention be focussed on evaluation of the whole system.

Vocational education should be held accountable for program planning, instructional program performance, and placement and follow-up. But employability, which was declared to be the principal goal for which the public school system is responsible, goes beyond traditional vocational education programs and requires the attention and resources of the entire system. So, too, does the goal of equality. Many vocational programs have been introduced into the public school system to reduce economic and employment inequalities, but the scope of the equality goal has exceeded the boundaries of vocational education.

Vocational education has assumed an extremely large task with extremely limited resources. If the vocational education subsystem can demonstrate its proficiency in planning, instructional program development and evaluation, product evaluation with relation to skills, and placement and follow-up of the product of the system, and its intent is to expand the program to assist people with special needs, then its purpose will have been fulfilled.

References Cited

Baldwin, T. S. *The development of achievement measures in trade and technical education.* Urbana: University of Illinois, 1971.

Barlow, M. L. *History of industrial education in the United States.* Peoria, Ill.: Chas. A. Bennett Co., Inc., 1967.

Barlow, M. L. *The unconquerable Senator Page.* Washington, D. C.: American Vocational Association, 1976.

Butler, E. C. *Instructional systems development for vocational technical training.* Englewood Cliffs, N. J.: Educational Technology Publications, 1972.

Byram, H. M. *A five state try-out and demonstration program to determine the generalizability of an evaluation system for local programs of vocational and technical education.* East Lansing: Michigan State University, 1971.

Carroll, A. B., and Ihnen, L. A. Costs and returns for two years of postsecondary technical education: A pilot study. *Journal of Political Economy,* December 1967, *75.*

Childers, B. E. Vocational program evaluation. In A. H. Krebs (Ed.), *The individual and his education.* Washington, D.C.: American Vocational Association, 1972.

Churchman, C. W. *The systems approach.* New York: Dell Publishing Co., 1968.

Cooley, W. W., and Lohnes, P. R. *Evaluation research in education.* New York: John Wiley and Sons, 1976.

Commission on the Reorganization of Secondary Education. *Cardinal principles of education. Bulletin 35 of the U. S. Bureau of Education.* Washington, D. C.: Government Printing Office, 1918.

Committee on Curricular Planning and Development of the National Association of Secondary-School Principals. The imperative needs of youth of secondary school age. *The Bulletin of the National Association of Secondary-School Principals 31*(145), March 1947.

Coster, J. K., and Ihnen, L. A. Program evaluation. *Review of Educational Research,* 1968, *38.*

Coster, J. K., and Morgan, R. L. A holistic approach to evaluating occupational education. In C. F. Ward (Ed.), *Perspectives on accreditation of postsecondary occupational education.* Raleigh: Center for Occupational Education, North Carolina State University, 1970.

Drewes, D. W., Nerden, J. T., Lawrence, J. E. S., and Oglesby, E. H. *Questions in vocational education.* Raleigh: Center for Occupational Education, North Carolina State University, 1975.

Education Policies Commission. *Education for all American youth.* Washington, D. C.: National Education Association of the United States and American Association of School Administrators, 1944.

Education Policies Commission. *Federal activities in education.* Washington, D. C.: National Education Association of the United States and American Association of School Administrators, 1939.

Education Policies Commission. *Manpower and education.* Washington, D. C.: National Education Association of the United States and the American Association of School Administrators, 1956.

Education Policies Commission. *The purposes of education in American democracy.* Washington, D. C.: National Education Association of the United States and the American Association of School Administrators, 1938.

Eninger, M. U. *The process and product of technical and industrial high school level vocational education in the United States: The product.* Pittsburgh: American Institute for Research, 1965.

Eninger, M. U. *The process and product of technical and industrial education in the United States: The process.* Pittsburgh: American Institute for Research, 1968.

Gordon, R. A. *The goal of full employment.* New York: John Wiley and Sons, 1967.

Harris, C. W. The appraisal of a school: Problems for study. *Journal of educational research 41,* November 1947.

Hirst, B. A., Jr. Components of competency-based vocational education. *American Vocational Journal 53*(8), 1977.

Hoepfner, R., Bradley, P. A., Klein, S. P., and Alkin, M. C. *The CSE elementary school evaluation kit.* Boston: Allyn and Bacon, 1972.

Katz, D. S., Morgan, R. L., and Drewes, D. W. *Vocational education and urban youth: A follow-up study of 1968, 1971, and 1972 graduates of the public schools of the District of Columbia.* Raleigh: Center for Occupational Education, North Carolina State University, 1974.

Kaufman, J. J., Schaefer, C. J., Lewis, M. V., Stevens, D. W., and House, W. W. *The role of the secondary schools in preparing youth for employment.* University Park: Pennsylvania State University, 1967.

Kaufman, R. A. *Educational system planning.* Englewood Cliffs, N. J.: Prentice-Hall, 1972.

Lee, A. M. and Fitzgerald, D. *Learning a living across the nation.* Vol. V. Flagstaff, Ariz.: Northern Arizona University, 1976.

Lee, C. W., Hinson, T. M., and Rohrbach, J. J., Jr. *Fourth progress and information report of the vocational education consortium of the states.* Atlanta: Commission on Occupational Education Institutions, Southern Association of Colleges and Schools, 1977.

Lessinger, L., and Tuttle, F. T. Accountability as part of professional development: Vocational-career education. In K. Greenwood and J. D. Skinkle (Eds.), *Advocacy on issues.* St. Paul: National Resources Panel on Vocational Professional Development, University of Minnesota, 1974.

Morgan, R. L., Ballenger, W. E., and Lawrence, J. E. S. (Eds.). *Management information systems for vocational education: A national overview.* Raleigh: Center for Occupational Education, North Carolina State University, 1974.

National Advisory Council on Vocational Education. *Vocational education: The bridge between man and his work.* Washington, D. C.: Government Printing Office, 1968.

National Education Association Bicentennial Committee. The seven cardinal principles revisited. *Today's Education 4,* 1976.

Pershing, J. A. *A model system for planning and evaluating vocational programs.* A paper presented at the American Vocational Association Convention (mimeograph). Atlantic City, N. J., December 4, 1977.

Persons, E. A. and Swanson, G. I. *An economic study of the investment effect of education in agriculture*. St. Paul: University of Minnesota, 1968.

Persons, E. A., and Swanson, G. I. *Education restrictions to agricultural success and the relationship of education to income among farmers*. Minneapolis: University of Minnesota, 1966.

Scriven, M. Evaluation perspectives and procedures. In W. J. Popham (Ed.), *Evaluation in education*. Berkeley: McCutchan Publishing Co., 1974.

Scriven, M. The methodology of evaluation. In R. W. Tyler, R. M. Gagne, and M. Scriven (Eds.), *Perspectives of curriculum evaluation*. Chicago: Rand McNally, 1967.

Shimberg, B., Esser, B. F., and Knight, D. H. *Occupational licensing: Practices and policies*. Washington, D. C.: Public Affairs Press, 1972.

Shinn, G. *Criterion-referenced measures and procedures in horticulture*. Gainesville: University of Florida, 1973.

Starr, H., and Diffenderfer, R. A. *A system for statewide evaluation of vocational education* (rev. ed.). Columbus, Ohio: The Center for Vocational Education, The Ohio State University, 1972.

Stufflebeam, D. L., Foley, W. J., Guba, E. G., Hammond, R. L., Merriman, H. O., and Provers, M. M. *Educational evaluation and decision making*. Itasca, Ill.: F. E. Peacock, 1971.

Uhl, P. *Identifying institutional goals*. Durham, N. C.: National Laboratory for Higher Education, 1971.

Van Gigch, J. D. *Applied general systems theory*, New York: Harper and Row, 1974.

Wentling, T. L., and Lawson, T. E. *Evaluating occupational education and training programs*. Boston: Allyn and Bacon, 1975.

Williams, R. T. *An analysis of supply and demand data for program planning in occupational education*. Raleigh: Center for Occupational Education, North Carolina State University, 1971.

APPENDIX

APPROACHES TO STATE PLAN DEVELOPMENT: FOUR CASE STUDIES

Leon A. Sims, Melvin E. Johnson, Charles O. Hopkins, Paula Keller, James H. Bishop and Lowery E. McHenry

State Plan Development in Florida

The Education Amendments of 1976 mandate the State Board for Vocational Education to be responsible for "coordination of the development, and actual submission to the Commissioner, of the five-year state plan . . . and of the annual program plan and accountability report . . ." [section 104(a)(1)(B)].

The Florida Statutes provide that ". . . The State Board of Education and the Commissioner of Education shall assign to the Division of Vocational Education such powers, duties, responsibilities, and functions as shall be necessary to insure the greatest possible coordination, efficiency, and effectiveness of vocational education" [section 20.15(6)].

The Bureau of Vocational Planning and Budgeting, Division of Vocational Education, was assigned the responsibility for coordinating the development of the five-year state plan, annual program plan, and annual accountability report for Florida's comprehensive vocational education program, and for submitting these documents to the commissioner. The Bureau of Vocational Planning and Budgeting was the matrix out of which were born leadership roles and strategies necessary to effect the planning process as emphasized in the Education Amendments of 1976. The bureau chief, after a thorough study of the law, serves as the leader of a team of division staff assigned the task of coordinating the development of the different plans.

It was imperative to initiate a series of meetings designed to apprise all persons employed in public and private agencies and organizations affected by the act of its provisions and the significant changes from previous legislation. The new provisions have focussed attention on the required contents of the different state plans and on their importance. As a result, a new emphasis on sharing, open communications, and cooperation among agencies and organizations has begun to take place.

The changes have been responsible for the production of a genuine planning document rather than just a compliance document; this document must reflect decisions relative to the planned allocation and use of resources. A wider variety of professionals and the lay public has been involved in the planning process, thereby creating a truer sense of accountability. The changes have prompted vocational education to be more responsive to the qualitative needs of business, industry, and minority groups and to work to equalize vocational education for all of Florida's citizens. A revision of Florida's goals for vocational education and the establishment of new priorities was also necessary. Many methodologies for determining numerical objectives had to be reexamined and established anew.

These changes have provided an opportunity for an improvement in the image of vocational education in the minds of all educators. For this reason, the formulation of the various state plans can no longer be thought of as an activity to be carried out merely to satisfy a federal requirement. The changes have brought about a total improvement of the planning process in Florida.

In addition to the active involvement of the persons prescribed in the Education Amendments of 1976 (sections 107 and 108) in the planning process, representatives from the following agencies and groups were involved as members of Florida's State Plan Committee: (a) Division of Public Schools; (b) Office of Associate Deputy Commissioner for Educational Management; (c) minority and equal opportunity groups; and (d) Department of Offender Rehabilitation. The representatives of these agencies and groups, as well as the total State Plan Committee, were invited to serve at the request of the commissioner of education. Their mandated responsibilities include reviewing drafts of the different plans, making recommendations for their improvement, and approving final state plans. In addition, they solicit responses such as the following from their constituents: concerns and ideas relative to the statewide comprehensive program of vocational education; specific goals, objectives, and activities; identification of desired data elements and their sources; specific data; and suggestions on the usage and dissemination of the different plans.

Further interpretation meant that the input from the State Plan Committee would be transmitted in writing by prescribed deadlines to the Chief of the Bureau of Vocational Planning and Budgeting, Division of Vocational Education. Members of the State Plan Committee served willingly and they served well! Their contributions were invaluable, and the results reflect their sincerity and cooperative spirit. Many who served gained much in understanding the content required and the potential use of the state plans. The requirement for special data input had no adverse effect on Florida's planning process. It just required dedicated staff to put forth an extra effort to meet deadlines.

Changes in the planning process in the near future will include a fully automated data base, thereby eliminating many hours of manual computations. The birth of the National Occupational Information Coordinating Committee (NOICC) and State Occupational Information Coordinating Committee (SOICC) should result in manpower data which are more usable and which are generated from a data base more current than the census of population. These two agencies will certainly provide the impetus necessary for a more coordinated planning effort. The new act could serve as a catalyst to bring about a melding of the minds of the decision makers at various educational levels to assure that no unwarranted duplication will result from programs generated as a product of state plan developmental activities.

There were no major problems in formulating the state plans for FY 1978. Although the absence of federal guidelines was first looked upon as a problem, it turned out to be a real help because the planners had more latitude to develop a format that would uniquely serve Florida's vocational education data base. All public hearings but one were sparsely attended, which limited input from the general public. Florida considers this a serious problem, and plans are under way for generating greater participation in the public hearings.

With so many different agencies and organizations represented on the State Plan Committee, the problem of "turf control" caused some minor consternation among the several divisions within the Department of Education. After an interpretation of the law and several meetings, greater understanding and cooperation evolved. The lack of a "tight" crosswalk between vocational education programs and occupational titles promoted a level of concern and frustration. This problem is currently being worked on; and its solution, coupled with the complete automation of Florida's state plan data base, should lessen many problems and bring about greater efficiency and effectiveness in the planning process.

The time frame which the states had for completing their planning tasks was a bit short and caused problems in the physical production of draft copies of the plans and in bringing together the State Plan Committee. It has been a perennial problem to get the published state plans out to the users before the inception of the implementation cycle for local districts. The U. S. Office of Education needs to consider a modification of the submission, review, and approval dates for state plans in order to have the approved plans back to the states in time for publication and distribution to users before the implementation cycle begins!

State Plan Development in Minnesota

The Education Amendments of 1976 did not change the process or the data base for the development of the Minnesota State Plan for Vocational Education. Many of the details stipulated in the new legislation resulted in considerably more information being printed, with less readability and comprehensibility in the document. We had previously utilized the U. S. Office of Education's six-digit coding system in projecting supply and demand, but we had not listed program offerings school district by school district.

The planning procedure required by the new law did not change appreciably the process used in Minnesota. A statewide planning committee involving many organizations and agencies has been used in Minnesota for many years. In addition, regional public planning sessions have been held each year.

In addition to those groups required under the act, it has been our procedure to ask that 10 additional organizations and agencies be involved in the process. Representation from these organizations and agencies involves a total of 23 people. These individuals form an ad hoc committee that reviews the procedure of developing the state plan, as well as analyzing the content of the state plan. Regional input sessions are held around the state to ask the general public, educators, business, industry, and any other interested parties to provide suggestions, ideas, and criticisms regarding vocational education. These meetings are publicized widely across the state, but unfortunately are not very well attended. After all ideas, data, and suggestions have been accumulated, a draft of the state plan is prepared and presented to the ad hoc committee for its formal approval. The process of gaining approval for the state plan includes a series of regional information meetings held across the state to inform the public and obtain reactions to the plan. These meetings are also publicized widely, and they are much better attended because the people have something substantive they can review, react to, and possibly accept.

In this process, it has been our observation through the years that most persons do not contribute to the general ideas or concerns presented, but they react more often to a single or unique situation that affects them individually. Participants of the ad hoc committee who represent an organization or an agency often come to the meeting with predrafted requests or recommendations that are extremely helpful in the development of policy statements.

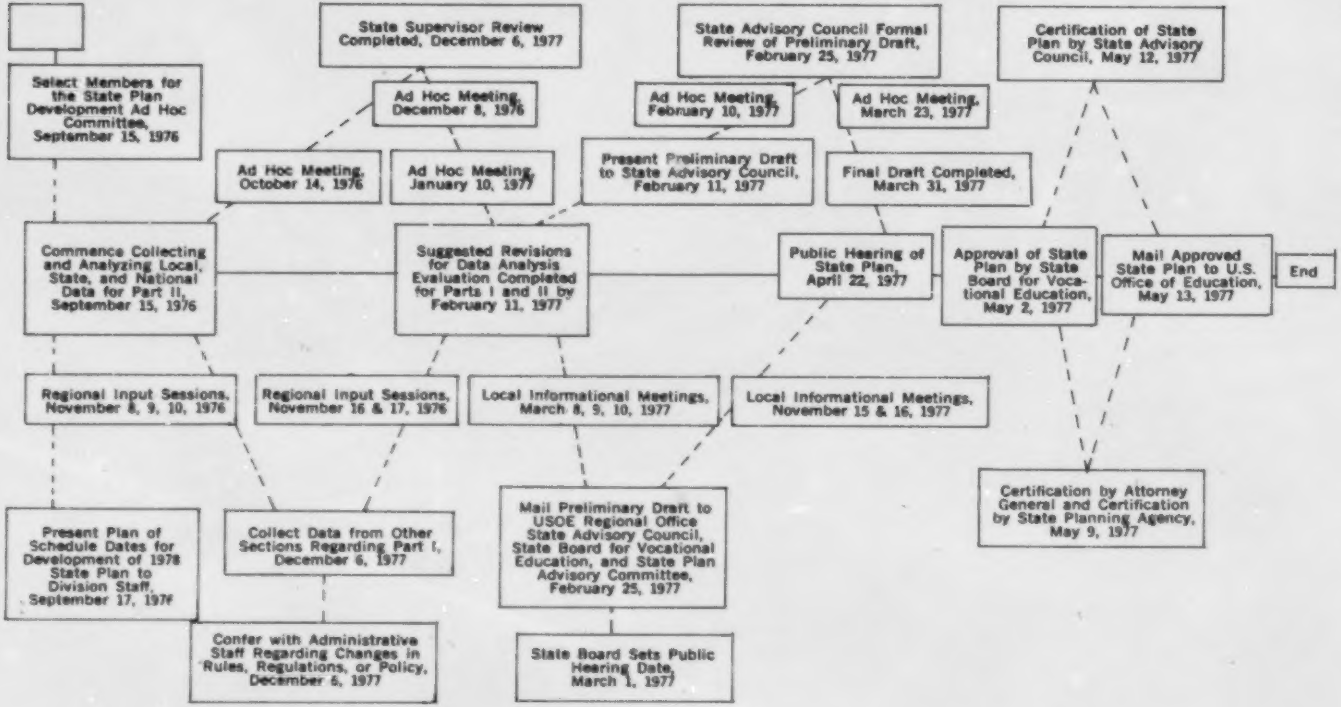
As previously mentioned, the most difficult aspect of state plan development is the presentation of projected program data by local district. This detailed projection is extremely difficult for local educational agencies to formulate, particularly in a period of declining enrollments. The aggregation of these data will probably prove to be reasonably accurate, but the specifics will probably be much less valid.

Data collection in the future will undoubtedly provide the state and the local districts with better bases on which to formulate projections. We foresee no change in the future in that the procedures used in the past conform to the requirements of the new act. However, additional detail will have to be added to the data base.

The schedule that was used to develop the Minnesota State Plan for Vocational-Technical Education in FY 1978 is shown in Figure 9.

Figure 9

SCHEDULE FOR DEVELOPING THE MINNESOTA STATE PLAN FOR VOCATIONAL-TECHNICAL EDUCATION (FY 78)


Select Members for the State Plan Development Ad Hoc Committee, September 15, 1976
Commence Collecting and Analyzing Local, State, and National Data for Part II, September 15, 1976
Regional Input Sessions, November 8, 9, 10, 1976
Present Plan of Schedule Dates for Development of 1978 State Plan to Division Staff, September 17, 1976
Ad Hoc Meeting, October 14, 1976
State Supervisor Review Completed, December 6, 1977
Ad Hoc Meeting, December 8, 1976
Ad Hoc Meeting, January 10, 1977
Regional Input Sessions, November 16 & 17, 1976
Collect Data from Other Sections Regarding Part I, December 6, 1977
Confer with Administrative Staff Regarding Changes in Rules, Regulations, or Policy, December 6, 1977
Suggested Revisions for Data Analysis Evaluation Completed for Parts I and II by February 11, 1977
Local Informational Meetings, March 8, 9, 10, 1977
Mail Preliminary Draft to USOE Regional Office State Advisory Council, State Board for Vocational Education, and State Plan Advisory Committee, February 25, 1977
State Board Sets Public Hearing Date, March 1, 1977
State Advisory Council Formal Review of Preliminary Draft, February 25, 1977
Ad Hoc Meeting, February 10, 1977
Present Preliminary Draft to State Advisory Council, February 11, 1977
Ad Hoc Meeting, March 23, 1977
Final Draft Completed, March 31, 1977
Public Hearing of State Plan, April 22, 1977
Local Informational Meetings, November 15 & 16, 1977
Certification of State Plan by State Advisory Council, May 12, 1977
Approval of State Plan by State Board for Vocational Education, May 2, 1977
Mail Approved State Plan to U.S. Office of Education, May 13, 1977
End
Certification by Attorney General and Certification by State Planning Agency, May 9, 1977

State Plan Development in Oklahoma

As a result of the Education Amendments of 1976, representatives from interested groups other than the State Department of Vocational Education were, for the first time, called upon to participate actively in formulating the state plan for vocational education. This departure from the established procedure represented the greatest change—and the greatest challenge—in state planning in Oklahoma.

Changes in content, although potentially far-reaching in their effects on the total program of vocational education in the state and nation, had less effect on the planning activity. The emphasis in the act on eliminating sex bias and sex role stereotyping and serving handicapped students in the least restrictive environment necessitated planning to promote change in the classroom. Oklahoma was one of the first states to appoint full-time personnel to work in the area of sex bias. This early appointment allowed these individuals to be involved at the fundamental level of planning both in a review and development capacity.

Although not required in the law, Oklahoma elected to plan for its 11 substate planning regions—an approach which greatly increased the computation required but also increased the usability of the plan. Furthermore, the Oklahoma program goals are based on manpower needs and do not reflect budgetary constraints. The plan truly addresses the needs of the state for vocational training rather than trying to forecast the amount of training the state will be able to deliver. The uses of funds set out in the Education Amendments of 1976 (sections 120, 130, 140, and 150) are projected at the 100 percent appropriation level.

The biggest change directly confronting state planners was the method outlined in the act for developing the plan. A flow schedule for carrying out the planning procedure in Oklahoma is shown in Figure 10. The act specified active participation of representatives of a number of agencies and groups—and conflict began immediately (and continues) with the identification of those representatives who would compose the state planning committee. Prior to the first of four official meetings, the state director wrote to agency and council heads requesting them to designate an official representative. It was the opinion of the state board, since all collegiate programs in the state are administered by the State Regents for Higher Education, that higher education would be represented by one individual. This position is supported in the act, which specifies additional representation only "if a separate agency exists." This point of adequate representation is now being contested in the first test of the new appeals procedure specified in the act.

According to provisions in the act, representatives of secondary vocational programs, postsecondary vocational programs, vocational teachers, local administrators, local school boards, the State Manpower Services Council, and the State Advisory Council for Vocational Education compose the official planning committee. In addition, the chairperson of the

Figure 10

OKLAHOMA STATE PLAN DEVELOPMENT SCHEDULE

1 Study of P.L. 94-482, State Plan Development Requirements

2 Identification of agencies or representatives to serve on the State Plan Planning Committee

3 Notification of agency or association to nominate State Plan Planning Committee representative

4 Development of status of vocational education to present to State Plan Planning Committee

5 Hold first meeting with State Plan Planning Committee

6 Develop data components specified during State Plan Planning Committee's first meeting

7 Conduct second State Plan Planning Committee meeting to review the data specified in the first meeting and identify the information needed for the third State Plan Planning Committee meeting

8 Conduct public hearings

9 Develop a rough draft of the State Plan utilizing the input from the second Planning Committee meeting

10 Conduct third Planning Committee meeting to present the rough draft of the State Plan

11 Make revisions in rough draft of State Plan with input from the Planning Committee—assemble additional information specfied by the Planning Committee

12 Conduct fourth Planning Committee meeting and present to the committee the additional information and the revised rough draft of the State Plan

13 Develop the final copy of the State Plan to present to the State Plan Planning Committee

14 Conduct the fifth Planning Committee meeting and present the State Plan for its recommendation

15 Present the State Plan approved by the Planning Committee to the State Board of Vocational and Technical Education to conduct a final public hearing

16 Present the State Plan to the State Advisory Council for Vocational Education for its approval

17 Conduct the final hearing for the State Plan and secure approval of the State Plan by the State Board for Vocational and Technical Education

18 Submit the State Plan to the U.S. Office of Education's Regional Office for approval.

State Education Council, an umbrella council composed of the three public education agencies in the state, personnel to remove sex discrimination, and other interested parties—including those from the higher education sector—were invited to provide input into the state plan.

These individuals participated in the development of the philosophical framework and practical approach utilized in formulating the plan. They reviewed three draft copies and approved the plan step by step and section by section as it was developed. They made suggestions regarding an approach to developing the format to be used in specifying additional components. Their input was, for the most part, sound and added significantly to the plan's substance.

Public hearings were announced and held as specified. However, there was a noted lack of interest and participation. No substantial input was received through this mechanism.

The State Advisory Council and the State Board reviewed and approved the final draft of the plan.

The act's mandate for more planning support data has resulted in a department-wide effort to pull the various components of its Management Information System (MIS) together to facilitate integration of the data required. The state has well-established manpower data, financial accounting, and evaluation systems; however, the blending of data from these systems proved to be difficult in the time constraint of state plan development. Nonetheless, data from the "stand alone systems" were used to formulate the program goals found in the State Plan (section 110), to project the resources required to achieve those goals, and to support the distribution of programs and funds between institutions and levels of training.

Planning in the future will undoubtedly require the use of more sophisticated data relating cost of the training to: the number of individuals served, the number of individuals prepared to enter the labor market, and the number of individuals obtaining employment in the field for which they were trained.

The involvement in and coordination of planning among agencies will undoubtedly be continued, requiring all of those with an interest in vocational education to become proficient in coordination, negotiation, and compromise.

The major problems encountered in Oklahoma's state planning process are not new to the state. Since 1972 the State Board for Vocational Education and the State Regents for Higher Education have been involved in a series of legislative and judicial hearings to determine whether duplication of programs actually exists and what the proper role of each agency is in providing vocational training. These problems, coupled with the issue of adequate representation mentioned previously, surfaced again and again throughout the planning process. In an attempt to keep the case out of federal court, the State Board for Vocational Education and the State Board of Regents met jointly and developed a detailed memorandum of agreement outlining the respective responsibilities of each.

State Plan Development in Pennsylvania

I. Changes in content requirements of the Education Amendments of 1976 which affect state planning for vocational education
   A. The development of a five-year state plan, an annual program plan, and an accountability report for each of the years included in the five-year state plan is required.
   B. The new legislation requires more detailed information to be included in the five-year state plan. In addition to the goals to be achieved, the following is required: information regarding current and projected needs; courses to be offered; projected enrollments by courses; responsibility for offering training opportunities; allocation of all local, state, and federal funds; level of education and institutions; and detailed descriptions of how these elements will result in the most effective utilization of funds.
   C. Emphasis on the elimination of sex discrimination and sex role stereotyping in vocational education will require (among other things) expenditure of funds for programs for homemakers, single heads of households, and employed women who wish to enter traditionally male occupations. Moreover, equal access to all vocational programs and services, regardless of gender, should be evident in both planning and evaluation.
   D. Coordination of training programs under the Comprehensive Employment and Training Act (CETA) and vocational education must be a part of the planning process.
   E. There is more interest on the part of Congress in maintaining existing programs "where necessary." Consequently, an assessment must be made to justify the continuation of each program.
   F. In a general application, the distribution of funds must be specifically described to meet the requirement of the act.
   G. There is a 90-day approval period by the U.S. Office of Education.
   H. There is increased emphasis on providing vocational education programs for the disadvantaged and handicapped. Coordination between vocational education and the Education of All Handicapped Children Act (P.L. 94-142) is also required.

II. Changes in procedural requirements of the Education Amendments of 1976 which affect vocational education planning
   A. A state plan planning committee has been established (section 107) to participate in the development of a five-year state plan, annual program plan, and annual accountability report.
   B. The development of the five-year state plan, annual program plan, and annual accountability report require coordination of the State Board and State Plan Planning Committee regarding scheduled meeting dates.

C. Additional time will be required to involve other groups and individuals in the planning process.

D. Funding requirements of the national priorities at 50 percent matching necessitates special program planning.

E. Preparation of the five-year state plan developed in the absence of approved federal rules and regulations.

III. Other groups and individuals involved

A. The following individuals and groups were involved in developing the five-year state plan, the annual program plan, and the annual accountability report: Pennsylvania Department of Education, including the Bureau of Vocational Education, Industrial Arts, Research Coordinating Unit, Guidance and Counseling, Corrections Education, Office of Equal Rights, Foreign Language Education, and the Office of Higher Education; Pennsylvania Commission for Women; Pennsylvania Human Relations Commission; Pennsylvania Chapter of the National Organization for Women; Pennsylvania Women's Equality Action League; Urban League of Philadelphia; Latin American Congress; Job Options for Women on Probation; Commission for Community Colleges; Commission for State Colleges and Universities; Commission for Independent Colleges and Universities; Harrisburg Area Community College; Williamsport Area Community College; Pennsylvania State University; Electronics Institute, Pittsburgh; Pennsylvania Association of Colleges and Universities; Board of State Colleges and University Directors; York County Area Vocational School; Upper Bucks County Area Vocational School; and the Lancaster-Lebanon Intermediate Unit.

B. The Bureau of Vocational Education sponsored a workshop for Department of Education staff and others to begin the development of the five-year state plan, annual program plan, and annual accountability report.

C. Subtask force groups met as necessary for input into the different plans.

D. The state plan planning committee appointed by the State Board met on several occasions to review the vocational education plans during their development and to make contributions to their content.

E. The workshop participants, the subtask force groups, and the state plan planning committee proved to be valuable sources of expertise in developing the subgoals and objectives for each of the eight goals for the five-year state plan.

IV. The effects of requirements for special data input on planning

Data regarding the number of limited English-speaking persons were almost impossible to find. There seems also to be no information available at the federal level. Appropriate data from the federal government should be made available if Congress desires specific programs and services for persons of limited English-speaking ability to be planned and implemented.

V. Anticipated changes in the planning process
   A. More of the state's responsibility will be to monitor the local education agency project applications and operation of approved programs for compliance with the legal requirements of the act and state guidelines. More of the regional and local planners' responsibility will be to determine the best utilization of funds.
   B. The states will have to stress to applicants the need for a much greater awareness of accountability for the use of funds.

VI. Major problems experienced or anticipated in planning for vocational education
   A. Problems experienced:
      1. Difficulty in preparing a five-year state plan, an annual program plan, and an annual accountability report without approved federal rules and regulations.
      2. Change in the definition of *postsecondary*, which now includes only persons enrolled in programs for which credit is given towards an associate or other degree.
      3. Definition of a local education agency, which caused some difficulty in determining the eligibility of intermediate units in Pennsylvania to receive federal vocational education funds.
   B. Problems anticipated:
      1. Fear of changes in the interpretations of federal regulations after commitments and implementation of a systematic program are initiated statewide.
      2. Concern of state and local administrators over escalating documentation, reports, and other accountability activities for justification of expenditures of federal funds.
      3. Reluctance and disillusionment on the part of local administrators to submit applications for federal vocational education funds because of:
         a. the restrictive requirements of the act with regard to the expenditure of funds;
         b. the lack of assurance of continued funding in subsequent years; and
         c. the absence of additional funds to provide for some of the new programs and services included in the new legislation.
      4. Possible increase in appeals from dissatisfied groups or individuals as the annual program plans are submitted each year for approval.
      5. Possible limits on the number of state staff positions retained to administer vocational education programs as federal support for administration costs is reduced from 80 percent to 50 percent over the next three years.

YEARBOOK AUTHORS

James H. Bishop is program planning specialist in the Division of Administrative and Planning Services, Bureau of Vocational Education, Pennsylvania Department of Education.

Ellen M. Bowers is a research specialist at the National Center for Research in Vocational Education, Ohio State University. Dr. Bowers' professional experience includes working with the Vocational Education Data and Occupational Information Data Systems (VEDS) Feasibility Study; serving as director of graduate studies in the College of Education, Kansas State University; extensive experience in vocational education in the California community college system. She is the recipient of two Education Professional Development Act (EPDA) awards.

Kenneth W. Brooks is an assistant professor of education in the Department of Administration and Supervision, College of Education, University of Kentucky. Dr. Brooks has had considerable experience in planning at the school district and state department of education levels. He has published several journal articles and manuscripts on the planning process and techniques of planning.

Lowell A. Burkett, executive director emeritus of the American Vocational Association, served as assistant executive secretary of AVA before being named to the position of executive director. His background includes trade experience, classroom teaching, and local and state administration. He served as vice chairman of the National Advisory Council for Vocational Education and as a member of the National Manpower Advisory Council. He is now a "gentleman farmer" at High Banks in Stephenson, Virginia.

John K. Coster is a professor of occupational education and director of the Center for Occupational Education at North Carolina State University.

He is a former vice president of the American Vocational Association for New and Related Services. He was chairperson of the National Seminar on Research in Evaluation, which was co-sponsored by the American Vocational Association in 1968. Dr. Coster's principal interest is in system evaluation.

Richard K. Crosby is an assistant professor of vocational education at the University of Louisville. Prior to his present position, he was an assistant professor in vocational education at Virginia Polytechnic Institute and State University. He has served as coordinator of program management and assistant director of industrial education in the Bureau of Vocational Education, Kentucky Department of Education. His work experience includes being an apprentice electrician teacher and a test technician for the General Electric Company. Dr. Crosby was a recipient of an Education Professional Development Act (EPDA) award.

Daniel B. Dunham is the assistant state superintendent in vocational-technical education, Maryland State Department of Education. Dr. Dunham received the B.S., M.S., and Ed.D. degrees from Oregon State University. In earning his doctorate, the major emphasis was on administration of vocational education. He has worked in both vocational-technical and career education, has been a researcher and administrator in both university and state government settings, and served as a teacher of vocational agriculture and local vocational education program director. He has served on numerous panels, advisory groups, and committees at the local, state, and national levels; conducted numerous workshops and seminars; and authored several articles and papers on a variety of subjects pertaining to vocational education.

Don K. Gentry has been state director of vocational education and executive officer for the Indiana State Board of Vocational-Technical Education for the past eight years. Before that he served as a teacher of vocational agriculture and in several state administrative positions in vocational education. He holds the B.S. and M.S. degrees from Purdue University and is presently completing an Ed.D. degree at Indiana University. Mr. Gentry's major writing has been on the governance of vocational education at the state level. He is a life member of the American Vocational Association and is very active in the National Association of State Directors of Vocational Education.

Kenney E. Gray is a research specialist at the National Center for Research in Vocational Education and an adjunct assistant professor in the Department of Agricultural Education, Ohio State University. Dr. Gray's background includes teaching in high school, adult, and university vocational education programs; administration in the Mississippi State Division of Vocational Education and the National Center for Research in Vocational Education; conducting planning and needs assessment studies for large cities and state divisions of vocational education; and directing national leadership development seminars in vocational education.

Gary Q. Green is coordinator of the Research Coordinating Unit in Vocational-Technical Education, Maryland State Department of Education. He was the senior research associate (assistant to the director) of the Tennessee Research Coordinating Unit from 1971 to 1975 at the University of Tennessee. Mr. Green received the B.S. and M.S. degrees from the University of Tennessee and anticipates receiving the Ed.D. degree from the University of Tennessee in August 1978. The emphasis of his doctoral work has been on educational administration and supervision. Mr. Green has worked as a management consultant, educational researcher, college instructor, guidance counselor, and currently is serving with several national and international organizations on computer systems design. He has written many articles for professional journals and has made several formal presentations on computer systems design and computer systems management.

Steven J. Gyuro is an assistant director of the National Center for Research in Vocational Education at the Ohio State University. Dr. Gyuro has had extensive experience in the management of educational programs and research. He served on the staff of the Kentucky Research Coordinating Unit, with state planning responsibility. He has developed instructional programs in vocational education planning and conducted numerous training programs focussing on management and planning.

Paul J. Harris holds the B.S. and M.S. degrees from the University of Maryland and an Ed.S. degree from the University of Wisconsin–Stout. He is presently coordinator of vocational program development in the Division of Vocational Education, Baltimore City Public Schools, where he is responsible for curriculum, program proposals, and the planning of new programs and facilities for vocational education, with recent emphasis in the area of vocational evaluation and vocational programs for the handicapped.

Charles O. Hopkins is coordinator of planning in the Division of Research, Planning, and Evaluation, Oklahoma State Department of Vocational-Technical Education, and associate professor in the Department of Occupational and Adult Education, College of Education, Oklahoma State University. Before joining the state department in 1969, Dr. Hopkins was a vocational agriculture teacher. He is responsible for preparing the annual and long-range state plans for Oklahoma. He has served as co-director of a National Education Professional Development Grant to train planners and evaluators from 25 states. He served on a task force to determine policies for implementing the National and State Occupational Information Systems. Dr. Hopkins has published several bulletins and conducted many workshops on Management by Objectives.

Melvin E. Johnson has been director of the Program Improvement and Information Section in the Division of Vocational-Technical Education, Minnesota Department of Education, for the past eight years. Before that, Dr. Johnson held teaching positions at the University of Minnesota and at a Minnesota postsecondary vocational institute. Dr. Johnson holds the B.S. and Ph.D. degrees from the University of Minnesota.

Paula Keller is a data specialist for the Division of Research, Planning and Evaluation, Oklahoma State Department of Vocational-Technical Education. She is responsible for the collection of data input to the Student Accounting System for the state of Oklahoma. She is also editor of the *Beacon*—the newsletter of the American Vocational Education Research Association.

Carl F. Lamar is a professor of vocational education at the University of Kentucky and a former assistant superintendent for vocational education in Kentucky. He is co-author of the book, *Teaching Vocations*. Dr. Lamar served as a member of the Commission on Occupational Education Institutions, Southern Association of Colleges and Schools. He was a member of the Advisory Council for the Center for Occupational Education at North Carolina State University, a member of the Advisory Committee on Vocational Rehabilitation of Disabled War Veterans for the U. S. Veterans Administration, and a member of a panel for the reorganization of the American Vocational Association. Dr. Lamar received the Outstanding Service Award from the American Vocational Association in 1974.

Eugene Lehrmann, state director of the Wisconsin Board of Vocational, Technical, and Adult Education, has 35 years of experience as a teacher and administrator in the state's vocational education system. A graduate of the University of Wisconsin (B.S., 1938; M.S., 1951), Lehrmann began his career in 1938 as a vocational agriculture instructor. Following a three-year tour with the Air Force during World War II, he served as coordinator and assistant director of the Wausau Vocational School. In 1958 he was named director of the Kenosha School of Vocational, Technical, and Adult Education. After serving as assistant state director from 1967 to 1970, he was named state director in 1970. Last December, Lehrmann was elected president of the National Association of State Directors of Vocational Education.

Carolyn G. Litchfield is an assistant professor for distributive education at the University of Kentucky. She began her career in education as a distributive education teacher-coordinator at Kempsville High School in Virginia Beach, Virginia. She has served as a graduate assistant at Virginia Commonwealth University, part-time instructor at Virginia Polytechnic Institute and State University, and as assistant professor of curriculum and instruction at Old Dominion University. Dr. Litchfield has served as a consultant to government and business and has written several publications in vocational education.

Yearbook Authors

Joseph F. Malinski serves as director of planning, development, research, and evaluation for Suburban Hennepin County Area Vocational Technical Schools in the Minneapolis area. He worked previously for the State Department of Education as a supervisor and consultant for vocational agriculture and then as director of program planning and development. Mr. Malinski currently serves on the Minnesota State Advisory Council for Vocational Education and on the Comprehensive Education Information System (CEIS) Data Acquisition Subcommittee.

Ann M. Martin is the associate commissioner for Occupational Planning, Bureau of Occupational and Adult Education, USOE. Dr. Martin's background includes college teaching, vocational education research, educational planning and vocational guidance film production. Before joining USOE, she was president of Mar Media, a consulting firm specializing in educational and manpower training programs, and served for four years in community college administration. She has written a monograph on the communication of occupational information.

Lowery E. McHenry is chief of the Division of Administrative and Planning Services, Bureau of Vocational Education, Pennsylvania Department of Education.

J. B. Morton is coordinator of information services, Division of Research, Planning, and Evaluation, Oklahoma State Department of Vocational-Technical Education, and an associate professor in the Department of Occupational and Adult Education, College of Education, Oklahoma State University. He has had extensive experience in vocational education as a vocational agriculture teacher, supervisor, and teacher educator. In recent years, he has been involved with management information systems and has researched and written a number of articles on vocational education and its data management.

Jerome E. Moss, Jr. is professor and chairman of the Department of Vocational and Technical Education, University of Minnesota. He has been a visiting professor at several major institutions, and is the author of many publications. Dr. Moss received an Outstanding Service Award from the American Vocational Association in 1977.

Patricia D. Murphy is professor and associate dean for research, curriculum, and graduate programs, and director of the Institute of Teacher Education at North Dakota State University. Dr. Murphy has conducted several projects funded by agencies such as USOE, AHEA, and the North Dakota State Board for Vocational Education. She directed a national project on the development of training curriculum modules in consumer education, has a wide variety of teaching experience, and has served as an officer in numerous professional organizations.

Darrell L. Parks is director of the National Academy for Vocational Education at the National Center for Research in Vocational Education, Ohio State University. Before assuming his present position, Dr. Parks served as assistant director of vocational education, Ohio Department of Education. He is immediate past president of the American Vocational Education Personnel Development Association.

Patricia D. Poplin is an assistant professor of vocational-technical education and special education at Virginia Polytechnic Institute and State University. She was a supervisor of vocational education in the Greensboro City Schools and an EPDA fellow and graduate research assistant at North Carolina State University prior to assuming her present position. Her interests are in special needs programs in vocational education and leadership development.

Betty C. Powers is associate professor and chairperson of the Department of Home Economics, Eastern Kentucky University. Dr. Powers served as head of Home Economics Education at the University of Kentucky for three years. She received a national EPDA grant for training administrators and leaders in vocational education. Dr. Powers has held a variety of offices in professional organizations. She was also a classroom teacher and a cooperative extension agent. She has been awarded several project grants.

David J. Pucel is professor and director of special services for the Department of Vocational and Technical Education, University of Minnesota. He was project director of the USOE-funded "Project MINI-SCORE" and the state-funded "Minnesota Vocational Follow-Up System," as well as a number of other research and development projects. He has written numerous articles and publications, including a chapter in the second AVA yearbook. Currently he is developing systems for providing inservice education for vocational-technical personnel.

Barbara L. Simmons is president and founder of BLS and Associates, Inc., a consulting firm which focusses on management leadership training with a person-centered emphasis. She is director of a USOE program called Mid-Atlantic AMIDS (Area Manpower Institutes for Development of Staff) and has had more than 20 years experience in education, from elementary teaching to teacher training. Ms. Simmons holds an A.B. degree and state certification in Group Social Work and Education. She has served as the education coordinator for the United Planning Organization, the anti-poverty agency for the District of Columbia, and was elected as an at-large member of the D.C. Board of Education in 1974. She is a National Friend of DECA, on the Board of Directors of the National Assocation for the Advancement of Black Americans in Vocational Education, the president of the National Caucus of Black School Board Members, and coordinating committee member and delegate to IWY D.C. Convention and Houston National Convention. Ms. Simmons has received the Alumni of the Year Award from Western Michigan University and the

Enterprise and Human Relations Annual Award from Bethune-Cookman College.

Leon A. Sims is chief of the Bureau of Vocational Planning and Budgeting, Division of Vocational Education, Florida Department of Education. He completed his undergraduate and graduate work at the University of Florida. He has served as a teacher of vocational agriculture and an associate teacher educator in agricultural education. His leadership in shaping vocational programs, policies, and procedures is felt as a result of his activities as a registered lobbyist with the Florida legislature, as well as a consultative participant in regional and national vocational organizations. Dr. Sims has assumed an active role in many professional and community organizations, including the Florida Vocational Association and the American Vocational Association.

William W. Stevenson is a research specialist at the National Center for Research in Vocational Education, Ohio State University. Until recently, Dr. Stevenson was responsible for research, planning, evaluation and information systems for the Oklahoma State Department of Vocational-Technical Education through contractual arrangement with Oklahoma State University. Dr. Stevenson was responsible for the development and operation of Oklahoma's Student Accounting System, the Occupational Training Information System (OTIS), and the data based planning system. He is presently directing a Center project to provide technical assistance in the evaluation of selected states.

Marjorie S. Stewart is professor and dean of the College of Home Economics, University of Kentucky. Dr. Stewart was research associate at the Center for Vocational and Technical Education at the Ohio State University. She has been an officer in various professional organizations and served as a consultant for career education, consumer education, and curriculum development for several states. She is currently involved with a project funded by USOE to prepare women in vocational education for administrative roles.

Francis T. Tuttle is state director of vocational-technical education in the state of Oklahoma. Dr. Tuttle has served as a vocational teacher, superintendent of schools, and state coordinator of vocational-technical education. He has been a member of the Oklahoma Manpower Planning Council, Board of Directors of the American Vocational Association, and past president of the National Association of State Directors of Vocational Education. Dr. Tuttle has served as advisor on several foreign assignments, including a team that evaluated the public education system in Sweden; as consultant on administration and supervision of vocational education in Thailand; and as a representative of the State Department in an exchange program on vocational education in Russia. He has also served as special consultant to the Bureau of Adult, Vocational, and Technical Education in the USOE and to the Department of Commerce. He has published many articles relating to his varied experiences. In 1975 he received the Outstanding Service Award from the American Vocational Association.

Benjamin C. Whitten has served as chief central office administrator for vocational education in Baltimore City Public Schools since 1968; his present title is assistant superintendent. Prior to this assignment, he held administrative positions in junior and senior high schools and vocational schools in Baltimore City. He taught industrial arts for 10 years before moving into administration. Dr. Whitten holds the baccalaureate, master's and doctor's degrees from Penn State University. He participates widely in vocational education activities at the state and national levels. He has been chairperson of the AVA Task Force on Urban Vocational Education and currently serves as president of the National Association of Large City Directors of Vocational Education.

INDEX

A

Accountability, 24, 65, 80, 91-92, 102-103, 138, 242-245, 246
Accountability reports, 81-82, 159
Accrediting Bureau for Medical Laboratory Schools, 39
Accrediting Commission for Business Schools, 39
Accrediting process, 250
Activities in planning, 131, 228
  Initiation of, 208-209
  Of local advisory committee, 174
Administration,
  Role in communication, 101
  Role in information system, 111-112, 123-124
  Role in policy making, 29-30
  Role in planner training, 200
  Role in planning, 203-204, 206, 208-211
Administrative decisions, 105-106
Administrative staff, 29-30
Administrative structure for planning, 133
Adopt-A-School, 176
Advisory committees, 168-181, 187, 219-220, 247
  Decision area, 109-117
  See also Local advisory committees
Advisory groups. *See* Advisory committees
Advocate team process, 220-226
  Defined, 224
  Strengths and weaknesses of, 224-225
Agencies,
  Allied, 42
  Supporting, 42
Agenda, advisory committee, 174
Agriculture, U.S. Department of, 38
Alternative planning structures, 88-89
Alternative programs, 220
Alternative strategies, 219, 224, 225-226
American Association of Nurse Anesthetists, 39
American Board of Funeral Service Education, 39
American Society for Training and Development, 40
American Vocational Association, 6, 28, 32, 242
Analysis,
  Defined, 213-214
  Of needs, 126
  Of the organization, 235
Analyst, information system, 105
Annual application, 146
Annual program plan, 87, 143, 146, 159, 184-185
Appalachian Regional Commission, 244
Appalachian Regional Development Act, 37
Applications,
  Of advocate team process, 225-226
  Of brainstorming, 233
  Of Delphi technique, 217
Appraisal, 219
Apprenticeship programs, 40
Approaches to planning, 15, 228
Approaches to securing resources, 133-140
Aptitudes of planning personnel, 193-194

Area Redevelopment Act of 1961, 243
Association for Independent Colleges and Schools, 39
Atmosphere for planning, 133
Attitudes in planning, 83-84, 125
Attitudinal Cluster, 110-114
Attributes of planning personnel, 193-194
Authoritative base, 191

B

Background of planning personnel, 194
Baltimore City Data Processing Advisory Committee, 175-176
Basic state grants, 145, 147
Benefits of planning, 26
Bilingual Education Center, 135
Brainstorming, 232-233
Briefing of planning team, 163
Budgeting, 235, 237-238
Bureau of Apprenticeship and Training (BAT), 40
Bureau of Occupational and Adult Education (BOAE), 85-86

C

California Community College Occupational Programs Evaluation System (COPES), 108-110
Career development, 43-44, 54
Catalog of NIE Education Products, 137
Centralized authority model, 88
Chairperson in advocate team process, 221
Chamber of Commerce, U.S., 28
Cluster categories, 112
Coastal Plains Regional Commission, 244
Cognitive Cluster, 111, 113-114, 116
Commerce, U.S. Department of, 38
Communication, 133, 204
  Between advisory groups, 169
  Among agencies, 188
  With the community, 168
  Between decision-making body and planning division, 207
  Among educational institutions, 182
  Individual, 100-101
  Importance of, 102
  Between information and planning structures, 100-101
  With local advisory committee, 174
  Need for factual, 100-101
  Skills of planners, 198
Communications system, 16
Community participation. *See* Advisory committees
Compatibility in planning, 23-24
Competencies for planning, 26, 194, 217-218
Competency-based curriculum system, 91-92
Competency-based Design for Implementing Individualized Instruction, 93
Compliance document, 79
Components in planning, 22
Composition of local advisory committee, 173
Comprehensive Employment and Training Act (CETA), 20, 28, 36-37, 81, 143, 207, 244
Comprehensive planning, 5-8
  Defined, 13, 19-20
  Need to understand, 13-14
Comprehensiveness, 71, 76
  Defined, 13
Concept of planning, 13
Conference Board, Incorporated, 40
Congress, U.S., 27, 29-30, 84, 118-119, 129
Constraint, 228
Consultants, 133
Context of planning, 22, 25-26
Continuous process of planning, 92-94, 211
Contracts, 138. *See also* Grants
Control in planning, 152, 230
Cooperation, 16, 35-46, 83
  Among agencies, 188
  Among educational institutions, 182
  Among federal agencies, 85-86
  Among information and planning systems, 124-125
  In policy making, 31
  Legislated, 36
  Within vocational education, 40-41
Coordinating Committee on Research in Vocational Education, 86
Coordination, 16, 35-46, 71, 76
  Actualization of, 44
  Among agencies, 188
  Among educational institutions, 182
  Among federal agencies, 85-86
  In policy making, 31
  Legislated, 36
  Within vocational education, 40-41
Coordination and Direction, Decision area, 110-117
Cost-effectiveness analysis, 235

Index

Council on Dental Education of the American Dental Association, 39
Council on Medical Education of the American Medical Association, 39
Craft advisory committee, 172-173, 174
Criteria,
  For distribution of funds, 143, 146-148
Critical Path Method (CPM), 226, 230
Cultural context of planner training, 196-197
Curriculum,
  Demand for, 56-57
Curriculum development decisions, 51
Curriculum effectiveness, 64
Curriculum materials, 135, 140

D

Data, 76-77, 80-81, 83, 98, 123
  Baseline, 131
  Defined, 106
  Uniform, 87
  Use of, 163-165, 167
  Use to effect change, 125-126
Data Cluster, 110, 113, 115
Data processing committee, 175-176
Data support, 148
Decentralized authority model, 88-89
Decision areas,
  Classification of, 109-117
Decision maker, 32
Decision-making activity, 24
Decision-making process, 49
Decision package, 237-238
Decisions in planning, 22, 123
  Administrative, 105-106
Defense, U.S. Department of, 38
Delivery systems, 23, 167-168
Delphi Panel, 108
Delphi process, 214-215
Delphi study, 215-216
Delphi Technique, 106-108, 215-220
  Advantages and disadvantages, 216-217
  Applications of, 217
Development of planning personnel, 199-201
Dimensions of planning, 17-19, 25
Directing planning activities, 152
Disadvantaged. *See* Equality
Discrimination, 125
Distribution of plans, 210-211
Diversified interest groups, 165
Diversity of vocational programs, 67-68

E

Economic context of planner training, 195-196
Economic needs, 42-44
Education Amendments of 1968. *See* Vocational Education Amendments of 1968
Education Amendments of 1972, 245
Education Amendments of 1976, 5, 14, 15, 18, 19-20, 28, 33, 40, 42, 50, 67, 80, 104-105, 119, 121, 124, 129, 134, 137-138, 139, 144-145, 148, 159, 172, 189, 207, 244, 245
Education for All Handicapped Children Act of 1975, 37, 42
Education Policies Commission, 246
Education, U.S. Office of, 32, 38, 39, 83
Educational laboratories, 136-137
Educational Resources Information Center (ERIC), 135-136
Effectiveness of planning, 23
Efficiency in planning, 23
Elements of planning, 22-23, 68-69
Emphasis on planning, 21
Employability, 244-245, 247
Employment,
  As goal of vocational education, 243-244
  Of planning personnel, 199-201
Employment opportunities, 43
Employment Security Commission, 121
Ends in planning, 22, 49. *See also* Outcome; Results
Engineers Council for Professional Development, 39
Equal opportunity, 52, 84
Equal Opportunity Act of 1964, 243
Equality, 245, 252
Equitable representation on planning team, 162
Evaluation, 76, 91-92, 152-153, 210, 235, 241-245
  Activities in, 83
  Decision area, 109-117
  Defined, 246
  Of educational system, 248-249
  Process of, 250
  Provisions for, 192
  Studies, 85
Events in planning, 228
Experience prerequisites of planners, 194
Experts. *See* Participants
External factors in planning, 207-208, 211

External groups, 35. *See also* Advisory committees

F

Facilities for planning, 133, 221-222
Facilities information, 122
Factors in planning, 28-29
Feasibility in planning, 23
Federal aid, 38
Federal Board for Vocational Education, 77
Federal government,
  Role in education, 246-247
  See also Congress, U.S.
Federal job training programs, 37-38. *See also* Names of specific programs
Federal resources,
  Allocation of, 142-148
Financial resources, 122
  Allocation of, 142-150
Five-year state plan, 87, 143, 146, 159, 184-185
Flexibility of planning process, 16-17, 164
Florida,
  State plan development in, 259-261
Flow, 61
Flow chart, 228-229, 230
Food Service Advisory Committee, 176
Forecasting, 214, 217
Formal information system, 101-102
Formula for Computing Regular Vocational Education Entitlements of Local School Districts in Kentucky for Subpart 2 (P.L. 94-482) Vocational Education Funds, 146-148
Four Corners Regional Commission, 244
Four-fold typology, 110-112
Full employment. *See* Employment
Functions of planning, 17
Funds for planning, 26, 132-133, 138-139. *See also* Financial resources

G

Gantt charts, 228
General Accounting Office, U.S., 79
General advisory committee, 172
General application for funds, 143
Goal planning, 76
Goal system, 103
Goals and objectives, 34-35, 129-131, 149-150, 233, 235, 243-245, 252
  Establishment of, 219, 220
Grants, 137-139

H

Handicapped. *See* Equality
Health, Education, and Welfare, U.S. Department of, 38
Horizontal planning, 18-19
Human resources, 153, 155
Humanistic management, 152
Humphrey-Hawkins Bill (H.R. 50, S. 50), 244

I

Impact of planning, 24
Implementation responsibilities, 152, 167
Inadequate planning, 14
Indiana State Board for Vocational and Technical Education, 184
Indiana State Plan, 184-185
Indiana State Plan Input Committee, 186
Individual competencies,
  Planning for, 91
Individual educational plan, 92
Individual needs, 120-121
Individual utility, 54, 65
Individuals,
  Capabilities of, 22-23
  Importance of, 25
Informal information system, 101-102
Information, 26, 62, 76-77, 80-81, 98, 131
  Defined, 106
  Importance of, 102-103
  Locally based, 105
  Presentation of, 62-63
  Use of, 163-165, 167
  Use to effect change, 125-126
Information base, 148
Information needs, 61, 104-105, 123
  Confusion about, 103
  For decision making, 104
Information resources,
  Allocation of, 140-141
Information system,
  Characteristics of, 98-99
  Constitution of, 104
  Cooperation with planning system, 124-125
  Design of, 119-123
  Formal, 101-102
  Influence of the human factor on, 98
  Informal, 101-102
  Limitations of, 98
  Management of, 165
  Modification of, 85
  Operation of, 119-123

Screening effect on human attitudes, 99-100
Use for planning, 123-124
See also Management information system
Input, 99-100. *See also* Involvement
Inservice activities, 200-201
Inservice training, 16
Institution planning, 89-92
Instructional content, 41
Instructional methods, 41
Instructional programs, 41-42
Inter-agency relationships, 87
Internal factors in planning, 211
Interior, U.S. Department of the, 38
Internships for planning personnel, 198, 199-200
Intra-program planning, 18
Involvement in planning, 76
Of affected personnel, 88
Increased level of, 183
Of other groups, 205, 207-208
Issues in planning, 23-24, 71, 131

J

Job and career competencies, 23
Job description, 233-234
Job training programs. *See* Training programs
Justice, U.S. Department of, 38

L

Labor market, 23
Determining manpower requirements of, 56, 121
Labor, U.S. Department of, 38, 39, 40, 79, 121
Lamar, Dr. Carl F., 6
Leadership Development Award Program, 139
Legitimacy, 53-54
Line position,
Planning personnel as, 204
Linkages, 83, 86, 183. *See also* Communication
Local advisory committees, 172-181
Models of, 175-181
Local education agency plans, 207
Local government, 28
Local level planning, 89-92
Information for, 105
Structure of, 87
Local needs, 108-109
Local resources, 149-150
Long-range planning, 70-71

M

Magnitude of vocational programs, 67-68
Management,
Commitment to planning, 25-26
Defined, 151
Of local advisory committee, 173
Of resources, 151-156
Management by Objectives (MBO), 233-234
Strengths and weaknesses, 234
Management control, 72-75
Management control planning, 70-71
Management cycle, 153, 154
Management functions, 21
Management information systems, 165, 206
Management process, 151
Manpower Development and Training Act of 1962, 243
Manpower requirements, 56, 121
Maryland Senate Bill 930, 172
Maturity,
Need for in planning, 124-125
Means, 22, 49. *See also* Resources
Mid-America Vocational Curriculum Consortium, 135
Minnesota,
State plan development in, 261-263
Minnesota Research Coordinating Unit, 120
Minority groups. *See* Equality
Mission of planning personnel, 205-206
Mission statement, 129-131, 191, 227
Model evaluation system, 241, 251
Modifying factors in planning, 62, 64
Monitoring component in planning, 209
Monitoring vocational education programs, 76, 82
Morrill Act of 1862, 244, 245, 246
Multiple agency coordination, 35-36
Multi-year planning, 235. *See also* Five-year state plan

N

National Advisory Council on Vocational Education, 14, 78, 131, 170
National Alliance of Businessmen (NAB), 39
National and State Advisory Councils on Vocational Education, 79
National Association for Practical Nurse Education and Service, 39
National Association of Trade and Technical Schools (NATTS), 39

National Center for Education Statistics (NCES), 85-86, 119, 141
National Center for Research in Vocational Education, 82
National Commission for Manpower Policy, 170
National Defense Education Act of 1958, 244
National Home Study Council, 39
National Institute of Education (NIE), 85, 136, 137
National League for Nursing, 39
National Network for Curriculum Coordination,
  Regional centers, 134
  Publications of, 134-135
National Occupational Information Coordinating Committee (NOICC), 39, 81, 84, 86, 121, 141
National planning, 77-78, 82-84
National priorities, 35
National Vocational Education Data and Reporting Systems (VEDS), 113
Needs,
  Assessment of, 252
  Changing, 59, 77
  Determination of individual, 62, 120-121
  Determination of labor market, 121
  Identification of, 217-218
  Unmet, 145
Needs-based planning, 126
Network, 228-229, 230
Nonhuman resources, 153, 155

O

Objectives. *See* Goals and objectives
Occupational committee, 172-175
Occupational Counseling, Guidance and Placement,
  Decision area, 110-117
Occupational Employment Statistics (OES), 121
Occupational Training Information System (OTIS) Report, 121
Office of Manpower Resources, Baltimore, Md., 178, 179
Oklahoma,
  State plan development in, 264-267
Operational plan, 34
Optimal demand approach, 57-64
Organization, 151
  For planning, 15-16, 25
  Of local advisory committee, 173
  Of planning group, 165-167
Organizational climate, 26
Organizational context,
  Of planner training, 197
Organizational screens, 99-100
Organizational structure, 98-102
Orientation,
  Of planning team, 163
  Of planning personnel, 199-200, 205-206
Outcome, 249, 254
  From staff involvement, 167-168
  See also Results
Output, 99-100, 254
Overview of planning, 20
Ownership concept, 161-162, 167
Ozarkian Regional Commission, 244

P

Panel of Consultants on Vocational Education, 28
Participants in planning, 23
  In advocate team process, 220-222
  In brainstorming, 232
  In Delphi study, 215-216
  In Management by Objectives, 233-234
Pennsylvania,
  State plan development in, 267-269
Personal context of planner training, 197
Personal objectives, 233
Personality of planning personnel, 193
Personnel development programs,
  Content of, 195-199
  Goals and objectives of, 190-192
Personnel resources, 141-142. *See also* Human resources
Personnel training programs, 139
Philosophical position, 23
Plan,
  Defined, 21
Plan for planning, 87, 184
Planners. *See* Planning personnel
Planning,
  Defined, 13, 21, 49
  Increased emphasis on, 14-15
  Need to improve, 14
  See also Horizontal planning; Intraprogram planning; Organization for planning; Vertical planning
Planning activities. *See* Activities
Planning, Budget and Evaluation, U.S. Office of, 85
Planning coordinator, 161, 164, 165, 166
Planning division,
  Location of, 203-204

  Responsibilities of, 204-205
Planning personnel, 132
  Characteristics of, 193-199
  Employment and development of, 199-201
  Orientation of, 205-206
  Training requirements for, 192-199
Planning, Programming, Budgeting System (PPBS), 234-237
  Advantages and disadvantages, 236-237
Planning responsibilities. *See* Responsibilities
Planning system,
  Cooperation with information system, 124-125
Planning unit, 34. *See also* Planning division
Plans, 252-253
Policies, 27-35
  Evolution of, 27-28
  Need to review, 30
Policy,
  Defined, 27
  Development of, 29-30, 32-33, 76
Political context of planner training, 195
Political influence in planning, 25
Political process, 49, 52
Population study, 108-109, 149
Practices,
  Changes in, 83-84
Preparatory curriculum, 57-58, 60
Principles of vocational education, 30
Printing Industries of Maryland (PIM), 178-179
Printing Labor Market Advisory Committee, 178-179
Priorities,
  Adjustment of, 208, 209
  Ranking of, 34
Proactive participation, 162
Problems in planning, 71
Procedural Cluster, 111, 114, 117
Process of planning,
  Steps in, 24-25
Processes, 253
Production of plans, 210-211
Productivity in planning, 24
Professional rewards, 168
Professional staff member, 160-162
Program areas,
  Identification of, 82
  With need for policy, 33-34
Program content, 91
Program elements,
  Completeness of, 167
Program Evaluation and Review Technique (PERT), 34, 152, 226-232
  Applications of, 231-232
  Strengths and weaknesses of, 230-231
Program Goals,
  Decision area, 109-117
Program level planning, 91-92
Program memorandum, 235-236
Program Objectives,
  Decision area, 109-117
Program performance, 254-255
Program Planning,
  Decision area, 110-117
  Decisions in, 51
  Strategy for, 50-65
Program purpose, 54
Program structure, 235-236
Programs, 149-150, 235
  Effectiveness of, 84
Project definition, 227-228
Project Delphi, 107
Project mission statement. *See* Mission statement
Projection techniques, 56
Proposal,
  Unsolicited, 138
  Writing of, 138-139
Public education system, 246
Public hearings, 187
Public Work and Economic Development Act Amendments of 1976, 37

Q

Quality control, 50
Quantitative demand, 55, 59, 60
Questionnaire,
  Used in Delphi study, 215, 216

R

Rand Corporation, 107, 235
Recruitment of planners, 193
Regional planning groups, 187
Regional planning structure, 87-88
Regulations in planning, 28-29
Rehabilitation Act of 1973, 37, 42
  Amendments of 1974, 37
Related educational areas, 162
Relationships with other agencies, 181-188
Report of advocate teams, 223-224
Request for Proposals (RFP), 138
Requirements of planning process, 25-26, 33
Research. *See* Information

Research and development activities, 82
Research and development centers, 136-137
Research Coordinating Unit Network, 137
Resources, 22, 23, 206-208, 225, 253
  Allocation of, 140-151
  Characteristics of, 153, 155
  Competing for, 137-139
  Creation of, 139, 140
  Designation of, 230
  Human, 153, 155
  Limited, 49
  Management of, 151-156
  Needed to support planning function, 129-133
  Nonhuman, 153, 155
  Of state advisory councils, 171
  Technical, 142
Resources in Education (RIE), 137
Resources in Vocational Education, 136
Responsibilities,
  Formulation of, 203-205
  Of local advisory committee, 175
  Of program planners, 191-192
Results,
  Desired, 156
  From staff involvement, 167-168
Retraining curriculum, 57-58, 60
Review process, 209-210

S

School representative,
  On local advisory committee, 173, 174, 175
Selection,
  Of local advisory committee members, 173, 174
  Of planning personnel, 193
Set asides, 54
Sex stereotyping, 125
Short-range planning, 70-71
Size,
  Of local advisory committee, 173
Skills,
  Marketability of, 84
  Needed for planning, 190
  Quality of, 84
Smith-Hughes Act. *See* Vocational Education Act of 1917
Social changes, 43
Social systems, 247
Social utility, 54, 65
Social values, 23, 55
Societal concerns, 181
Societal demand for workers, 56, 57
Societal needs, 42-44
Societal values, 51-52, 53, 248-249
Socio-economic goals, 56
Southwest Educational Development Laboratory, 220
Special interest discussion groups, 165
Special needs groups, 145
Staff,
  Need for information on, 122
Staff involvement, 160-168
Staff members, professional, 160-162
Staff position,
  Planning personnel as, 204
Staff selection, 152, 160-163
Standards for policy development, 32-33
State advisory councils, 14, 78-79, 170-171
State board for vocational education, 27-30, 143, 159
State funds,
  Distribution of, 148-149
State government,
  Changes in, 181-182
State legislature, 27-30, 52
State-level staff, 161
State Manpower Services Council, 171
State Occupational Information Coordinating Committee (SOICC), 39, 121, 141, 187-188
State plan, 78-79
  Preparation of, 159
  See also Five-year state plan; Annual program plan
State plan committee, 87, 159
  Establishment of, 182
State plan development,
  In Florida, 259-261
  In Minnesota, 261-263
  In Oklahoma, 264-267
  In Pennsylvania, 267-269
State Plan Input Committee, 185-186
State Plan Sounding Committee, 186-187
State Plan Writing Team, 186
State planning, 33-34, 80
  Federal assistance for, 83
  Importance of, 78-79
  Need for, 87-89
  Organization for, 88
State resources,
  Allocation of, 146-149
Strategic planning, 70
Strategies,
  Identification of, 220
  See also Alternative strategies

Index

- Strategy,
  - Characteristics of, 50
  - Comprehensive, 44
  - For program planning, 50-65
- Student accounting system, 122-123
- Student achievement, 84, 85
- Students. *See* Individuals
- Substance of planning, 22-23
- Subjective process, 49
- Subsystems, 50
- Supply and demand, 121-122
- Supporting services, 18, 133, 141
- System,
  - Defined, 213, 245
- System accountability, 246
- System analysis, 213-214
- System performance, 250-254
  - Evaluation of, 245-249
- Systems approach, 153
  - Orientation to, 191-192

T

- Task force groups, 165, 187
- Tasks. *See* Activities; Responsibilities
- Teachers, 160, 161
  - Need for information on, 122
- Technical resources, 142
- Technical writers, 223
- Techniques for planning, 16, 26, 213-214, 232
  - Ancillary, 24
  - *See also* Names of specific techniques
- Technological support, 164-165
- Technology,
  - Changes in, 42-43
- Time for planning, 26, 132, 221, 230
- Timeline, planning, 164
- Tools of planning, 26
- Topic subcommittees, 165
- Trade schools, 39
- Training programs,
  - Business and industry, 39-40
  - Private, 39
- Twin Cities Metropolitan Area Planning Task Force (Region XI), 90

U

- Unemployment, 243-244
- Uniform definitions, 81-82
- Unit objectives, 233
- Unmet demand approach, 61-64
- Unmet demand for workers, 62
- Utility in planning, 23

V

- Values, 52. *See also* Social values; Societal values
- Vertical planning, 18
- Veterans Administration, 38
- Vocational Education Act of 1917, 30, 31, 77, 244, 245, 246
- Vocational Education Act of 1963, 14, 18, 28, 77-78, 170, 243, 244, 245
- Vocational Education Amendments of 1968, 14, 20, 28, 40, 78-79, 170, 245
- Vocational education data system (VEDS), 81-82, 119, 122
- Vocational educators,
  - Responsibility of, 30-31
- Vocational goals, 51-52
- Vocational-Technical Education Consortium, 135

W

- Weighting of factors, 65
- Welding Advisory Committee, 180
- Women, 125
  - Employed, 43
  - *See also* Equality
- Work breakdown, 227-228
- Work planning, 70-71

Y

- Youth Conservation Corps (YCC), 37
- Youth Employment and Demonstration Projects Act of 1977 (YEDPA), 37, 82

Z

- Zero-Based Budgeting (ZBB), 237-238
  - Advantages and disadvantages, 238